EUROPEAN PARLIAMENT

DG INTERNAL POLICIES OF THE UNION

Policy Department Economic and Scientific Policy

On the European Commission's Green Paper "Healthy Diets and Physical Activities

Briefing Note

(IP/A/ENVI/OF/2005-104)

IP/A/ENVI/NT/2006-24 **PE 373.604**

This study was requested by the European Parliament's Committee on the Environment, Public Health and Food Safety.

Only published in English.

Author: Christine Guittard

Senior Consultant

Nutrition, Scientific & Regulatory Affairs

FRANCE

Tel. +33 1 46 05 61 70

cristine.guittard@club-internet.fr

Administrator: **MENEGHINI, Gian Paolo**

Policy Department Economy and Science

DG Internal Policies

European Parliament

Rue Wiertz 60 - ATR 00K072

B-1047 Brussels

Tel: +32 (0)2 283 22 04

Fax: +32(0)2 284 69 29

E-mail: gianpaolo.meneghini@europarl.europa.eu

Manuscript completed in May 2006.

IP/A/ENVI/NT/2006-24 **PE 373.604**

EXECUTIVE SUMMARY

The Commission's Green Paper on promoting Healthy Diets and Physical Activity is triggering debate on initiatives aiming at preventing obesity. The primary objective is to create conditions under which the best practices can be adopted.

Unhealthy diets and lack of physical activity are the leading causes of avoidable illness and premature death, and the rising incidence of obesity is a major public health concern in the European Union.

Many factors have to be taken into account when addressing the problem of obesity. Consequently, it calls for the development of strategies entailing a multi-stakeholder approach with action being taken at local, regional, national and European levels.

The Green Paper invites contributions from interested parties on a wide range of issues, including topics relating to nutrition and physical activity. The aim is to gather information with a view to giving a European dimension to the battle against obesity, in terms of support for and coordination of the existing national measures.

The many existing initiatives to promote healthier lifestyles all across the EU contribute to raising consumer awareness and illustrate an existing significant level of concern among society. A number of controlled intervention trials, mostly school-based, show some improvement in health-related behaviour but most have not had a significant impact on the weight status of participating children. The follow-up times vary considerably and, in most cases, the length of time over which interventions were being conducted was too short to modify weight status. But this provides also a great deal of information about how to improve interventions in the future.

Long-term interventions at community level are larger scale trials involving all stakeholders. They proved to be the only existing programmes with a significant decrease of the prevalence of overweight and obesity in the population studied. The French Fleurbaix-Laventie programme is one major initiative with community involvement, which has successfully – over a 13-year period – stemmed the growth in childhood obesity rates in two communities, whilst the obesity rates in neighbouring communities have more than doubled. Proximity to citizens, tailoring of actions to the needs and duration are critical factors of success. The EPODE programme is building on the success of the study. It has been disseminated in France and aims at developing a best practice model for further replication in other European countries. The Kiel Obesity Prevention Study in Germany also starts showing promising results. Another programme has been recently identified for promotion across Europe: the Shape Up project, a participatory project for the prevention of childhood obesity. "Shape Up" seeks to assess and influence the behaviours and social environmental conditions related to food, nutrition and physical exercise by designing and proposing real actions to promote the conditions for healthy habits and to prevent child obesity in a sustainable way.

Alarming rates of overweight and obesity among children has also triggered many debates on the role of TV advertising on children's food choices and preferences. Thorough scientific reviews of fast growing science to help better understand the impact of TV advertising on children's preferences, food consumption and behaviour.

But as well as there is no link proven between TV advertising and obesity, there is no scientific evidence to demonstrate that advertising restrictions could impact the incidence of obesity. TV advertising is already a highly regulated area. The debates resulted in harmonizing the existing self-regulatory measures across the EU and strengthening them as well. Consequently, the debate on food marketing to children keeps evolving and somewhat shifts away from new restriction approaches only. It is focused on how to best encourage the use of advertising to promote balanced diets and healthy lifestyles. Investments to raise consumer information and develop educational programmes for children in particular are also being considered.

The increasing prevalence of obesity is a challenge for society. That implies that population education strategies will need a solid base of policy and environment-based changes to be effective in eventually reversing these trends.

A number of gaps and issues to be addressed have been identified. This calls strongly for a number of actions at Community level and future research in various areas which are addressed at the end of this paper.

N.B. The relationship between diet, physical activity and health is not addressed per se in this report, neither are obesity figures in the various EU countries. Both areas are considered as known and existing background information to this paper.

TABLE OF CONTENTS

1 INTRODUCTION: TACKLING OBESITY

At present, in the EU countries, up to 27% of the male population and 38% of females, including more than 3 million children, suffer from obesity.

Background

The increasing industrialization, urbanization and mechanization occurring in most countries around the world, also known as the nutrition transition, is associated with changes in diet and behaviour, in particular, diets are becoming richer in high-fat, high energy foods and lifestyles more sedentary. Increases in obesity over the past 30 years have been paralleled by a dramatic rise in the prevalence of diabetes and other chronic diseases.

Mortality rates increase with increasing degrees of overweight, as measured by BMI (Body Mass Index). As BMI increases, so too does the proportion of people with one or more comorbid conditions. Eating behaviours that have been linked to overweight and obesity include snacking/eating frequency, binge-eating patterns, eating out, and (protectively) exclusive breastfeeding. Environmental issues are clearly important, especially as many environments become increasingly ‘‘obesogenic’’ (obesity-promoting).

Diet, physical activity and excess weight gain and obesity

Overweight and obesity are the result of inadequacy or imbalance between energy intake, i.e. what people eat, and energy expenditure, i.e. the level of physical activity.

Physical activity is an important determinant of body weight. In addition, physical activity and physical fitness (which relates to the ability to perform physical activity) are important modifiers of mortality and morbidity related to overweight and obesity. There is firm evidence that moderate to high fitness levels provide a substantially reduced risk of cardiovascular disease and all-cause mortality and that these benefits apply to all BMI levels. Furthermore, high fitness protects against mortality at all BMI levels in men with diabetes. Low cardiovascular fitness is a serious and common comorbidity of obesity, and a sizeable proportion of deaths in overweight and obese populations are probably a result of low levels of cardio-respiratory fitness rather than obesity per se. Fitness is, in turn, influenced strongly by physical activity in addition to genetic factors. These relationships emphasize the role of physical activity in the prevention of overweight and obesity, independently of the effects of physical activity on body weight.

Prevention programmes will stem the obesity epidemic more efficiently than weight-loss programmes. There is general agreement that fighting overweight and obesity is extremely difficult, especially in adults and that dietary and lifestyle measures most often do not lead to long-term sustainable weight reduction. It is also commonly accepted that lifestyle and food behaviour patterns developed in childhood remain in adulthood. Consequently, given also the alarming rise of children’s overweight and obesity, more focus has been paid on prevention measures, especially in children.

Promoting healthy diets and physical activity has potential for reducing not only obesity but also the risks related to related chronic diseases, i.e. hypertension, heart disease, diabetes and certain forms of cancer. More generally, healthy diets and physical activity considerably improve the quality of life.

Obesity is a multi-causal condition, as illustrated by Table 1 below. This implies multiple approaches to fight it, which are not being mutually exclusive but rather complementary. In other words, tackling it requires a global comprehensive preventive approach, including multi-stakeholder efforts at local, regional, national, European and global levels.

The following review is first addressing physical activity among the various components of the 'obesogenic' environment and is an attempt a) to demonstrate the possible impact of various intervention measures or programmes, but also b) to identify the promising approaches. It then comments on the existing knowledge about the influence of TV advertising on children's food choices and behaviours. Lastly, a number of possible for actions at Community level are considered.

Table 1 : Causes of childhood overweight and obesity

International factors	National factors	Community/Locality	School	Home	Individual
▪ Globalization of markets: more convenience foods, sedentary entertainment	▪ Transport ▪ Urbanization ▪ Manufactured/imported goods	▪ School buses ▪ Safety of children ▪ Community awareness/attitudes	▪ Active play at school time and space, physical education, school playground	▪ Family diet ▪ Number of televisions ▪ Family activity patterns	▪ Child's diet and activity patterns at school ▪ TV in child's room
▪ Marketing of foods to children, child-oriented foods	▪ Sanitation ▪ Health ▪ National education	▪ Adult obesity prevalence ▪ Community sports clubs	▪ Walking, cycling to school ▪ Teacher knowledge/attitudes	▪ Family socio-economic status ▪ Parents knowledge/attitudes	▪ Child's diet and activity outside school
▪ Food and nutrition ▪ Development of children's spending power	▪ Child labour protections ▪ Vending machines ▪ Media and culture ▪ Economy	▪ Local school board and Parent Teachers Organizations ▪ Paediatric care ▪ Agriculture/gardens	▪ School nurse knowledge/attitudes ▪ School lunch programme ▪ School snack shop	▪ Child care	
		▪ Local markets ▪ Playgrounds/parks	▪ Education regarding diet and activity		
		▪ Education level of community			
		▪ Median income of community			

Source: The prevention of childhood overweight and obesity Doak et al., 2006

2 ACTIONS TO PROMOTE PHYSICAL ACTIVITY

"What actions are taken in the Member States to promote physical activity given that people are consuming fewer calories but obesity is on the rise?"

There is convincing evidence that regular physical activity is protective against unhealthy weight gain whereas sedentary lifestyles, particularly sedentary occupations and inactive recreation such as watching television, promote it. Most epidemiological studies show smaller risk of weight gain, overweight and obesity among persons who currently engage regularly in moderate to large amounts of physical activity.

Studies measuring physical activity at baseline and randomized trials of exercise programmes show more mixed results, probably because of the low adherence to long-term changes. Therefore, it is ongoing physical activity itself rather than previous physical activity or enrolment in an exercise programme that is protective against unhealthy weight gain. The recommendation for individuals to accumulate at least 30 minutes of moderate-intensity physical activity on most days is largely aimed at reducing cardiovascular diseases and overall mortality. The amount needed to prevent unhealthy weight gain is uncertain but is probably significantly greater than this. Preventing weight gain after substantial weight loss probably requires about 60--90 minutes per day. Two meetings recommended by consensus that about 45--60 minutes of moderate-intensity physical activity is needed on most days or every day to prevent unhealthy weight gain. Studies aimed at reducing sedentary behaviours have focused primarily on reducing television viewing in children. Reducing viewing times by about 30 minutes a day in children in the United States appears feasible and is associated with reductions in BMI.

Many initiatives aiming at encouraging people to practice physical activity have been taking place all across Europe over the recent years. Quite many of them are still going on and new ones are permanently developed. They are local or national, public or private, all focused on nutrition and/or physical activity. They all aim at encouraging people to improve their diet and have a better lifestyle. The impressive (but not exhaustive) long list of projects gives an overview of various initiatives taken in different Member states.

In addition, a significant number of intervention studies, mostly aiming at preventing children's overweight and obesity have been carried out in various countries around the world, both on diet and physical activity. Key learnings can be drawn, which helps greatly to identify existing gaps towards effective programmes, lay ground for future improved research areas and disseminate existing positive experiences.

2.1 Review of existing lifestyle campaigns in various European Countries

Table 2 (see Annex 1) provides an overview of various initiatives taken mostly either at Member state, regional or community level in the EU. More than 60 have been identified. This gives a rapid overview of their focus and objectives, timeline, involved parties, key messages and evaluation when available.

These numerous initiatives demonstrate that all stakeholders both at local, national or community level are involved, which indicates that they are quite conscious that actions are urgently needed. There should be a practical review of their outcome and key learnings to disseminate as much as possible. This definitely helps raising the awareness of individuals and children in particular about the actions which can be taken to improve their diet and increase physical activity level.

2.2 Intervention programmes

Prevention has been shown to be potentially more efficient than treatment alone in addressing the obesity epidemic. Prevention and treatment of obesity and overweight may be somewhat easier in children than in adults because children are still growing in height. Related to the increased energy needs during growth, a child can achieve reductions in adiposity without reducing energy intake. One example of a treatment programme for obese children involves holding energy intake constant during growth in order to reduce a child's body mass index (BMI) and adiposity measures. Using such an approach at a young age, reversing overweight and obesity can be achieved without drastic behaviour changes. Although paediatric studies show that the effects of all types of treatment approaches diminish over time, there is still evidence showing long-term benefits related to obesity treatment. Furthermore, effective prevention of childhood overweight is the first step towards preventing obesity. Effectively preventing obesity in childhood onwards may also prevent the onset of adult obesity and reduce chronic disease. Given the inclusion criteria, this review was consequently purposely limited to school-based intervention studies with a quantitative evaluation using anthropometric outcomes and that intervene on diet or activity related behaviours.

Among other examples, a review to identify aspects of successful childhood overweight prevention programmes has very recently been published (Doak et al., 2006). Preventing overweight and obesity requires understanding and addressing the 'obesogenic environment' in which children live. Environmental factors take precedence in prevention efforts because they provide the most potential for the greatest impact. The focus was on population-based prevention childhood overweight and obesity prevention programmes, particularly interventions that address environmental determinants and can be applied on a large scale and are sustainable (preferably multi-sectorial). More details about the review are provided in Annex 2.

The studies very often combine dietary measures or nutrition information/communication with physical activity programme. That means that assessing the impact of physical activity *per se* is impossible in many cases.

Due to the broad variety of study protocols and designs, it is therefore very difficult to compare them directly.

However, it was possible to gather a number of key learnings on specific aspects of the studies, such as:

- Dietary vs. physical activity interventions
- Delivery of the intervention
- Target population
- Integrating overweight/obesity prevention into existing initiatives
- Sustainability
- TV viewing
- Parental involvement

See Annex 2 for details.

Treatment studies show that family-based interventions combining education with behaviour modification are most successful. Similar methods could be applied to a prevention model. For example, parental participation, education and active involvement could be achieved through parent–teacher organizations.

No intervention programmes address the economic environment and none are tailored to the community level or address regional or national level factors. In fact, economic, community and regional/national level factors are extremely difficult to address and any changes made at these levels would be difficult to measure for effectiveness. This is confirmed by the preliminary results of the ABENA study (France) aiming at nutritional surveillance of low-income subgroups of the population. More thought needs to be given to finding ways of implementing and testing such large scale changes. Furthermore, although more than half of all interventions do address family-level factors these are not tailored.

Conclusions and recommendations

There is a growing body of studies on the prevention of childhood obesity. More than half of school-based interventions aimed at preventing overweight and obesity show some improvement in health knowledge and health-related behaviour but, up to now, most have not had a significant impact on the weight status of the participating children. Studies using targeted prevention strategies also improve health-related behaviour and are most successful (in terms of weight status) when parents are also involved in the intervention. The follow-up times vary considerably and, in most cases, the length of time over which interventions were being conducted was too short to modify weight status.

The interventions reviewed are not limited to one or two isolated studies that have worked but were carried out in countries as diverse as Russia, Australia, the USA, Greece, Germany, Italy and Israel. The diversity of interventions shown to be effective adds to the likelihood of finding a suitable programme that can be adapted to a particular community or region.

There are limitations as to how much can be concluded from comparing studies with different study designs, aims and methodological approaches. Another limitation is the difficulty in comparing outcomes that are reported in different ways.

In spite of the differences in results and methodology, this provides also a great deal of information about how to improve interventions in the future.

The small number of studies, each using a different methodology and targeting different aspects of obesity-related behaviours, precludes drawing clear and definite conclusions. There is a clear need for the continuation of research, using better and larger studies, with a long follow-up and improved research methodologies.

It is not clear which aspects of interventions are most likely to succeed on a large scale. However, other ongoing studies or others not published at the time of the reviews do provide additional information.

Furthermore, the fact that both of the studies that included a television intervention were effective warrants further investigation.

3 BEST PRACTICES

"What best national or local practices and policies can be disseminated or replicated at the EU level - looking beyond the EU to action taken in other countries?"

As shown in the previous section, a significant number of obesity prevention strategies for children have been developed. They are all based on prevention programmes, mainly carried in a school environment, involving either nutrition and/or physical activity programmes. But their efficacy (in terms of actual obesity prevention) remains subject to debate.

Table 2 (see Annex 1) makes an extensive review of either recent or ongoing initiatives in the EU Member states aiming at promoting healthy lifestyles. But most of them would be difficult to replicate or disseminate as best practice due to lack of evaluation.

However, a number of studies or initiatives, still unpublished and therefore not included yet in literature reviews, do bring quantified benefits and could serve as a basis for further dissemination.

3.1 The Fleurbaix and Laventie Ville Santé study (FL)

The FL study was designed to monitor trends in the prevalence of childhood overweight in two towns in northern France where a school-based nutrition information programme was initiated in 1992, followed (from 1998 to 2002) by a longitudinal study of determinants of weight gain and an ongoing (2003-2008) whole-community intervention programme. The aim of the study was to investigate changes in BMI and the prevalence of overweight between 2002 and 2005, and to compare (for the 2004-2005 school year) the prevalence of childhood overweight in FL with that observed in two nearby control towns (CTs).

As a whole, the Fleurbaix-Laventie (FL) Ville Santé study allows to measure the effectiveness of a whole-of-community prevention programme on the prevalence of overweight including obesity over 12 years.

Children aged 5-12 were assessed in FL and in two control towns (CT) between 1992 and 2004 using serial cross-sectional studies (n=804, response rate 81%). The interventions were performed in two steps. The first intervention (1992-2000) focused on nutrition education in schools. The second intervention (2000-2004) involved the whole FL population (families and children) in community actions targeting physical activity and nutrition.

Baseline prevalence was 11.4% and 12.6% in FL and CT respectively. In FL, during the first step, prevalence of children overweight including obesity first stabilized (11.4 % to 14.3 %). During the second step, it then decreased (14.3% to 8.8%; decline much greater in girls than boys).

Prevalence of children overweight including obesity in the CT increased: 11% in 1992 to 17 .8% in 2004. In 2004 difference in the prevalence of children overweight including obesity between FL and CT became significant (8.8 % to 17.8 %).

This whole-of-community prevention program successfully reduced childhood overweight including obesity, although it took more than 8 years for the decline in prevalence to become apparent. Interventions targeting schools only are not efficient enough. The involvement of the whole community is necessary to reduce the prevalence of childhood obesity.

This successful childhood obesity prevention programme is the only intervention study showing a reversal of trends in the prevalence of childhood overweight through a 12-year community-based nutrition programme.

The results also confirmed the strong influence of parental social class on the risk of overweight and obesity. These results confirm a preceding study performed in the same area, which showed that between 1989 and 1999, there was no change in either mean BMI or overweight prevalence in 5-year-old children from the highest social class. Recently, Stamatakis *et al* have reported similar results in 5- to 10-year-old English children: those from higher-income households had lower probability of being obese than their peers from lower social classes. Many earlier studies have examined the relationship between parental socio-economic status (SES); most reported an inverse correlation between SES and obesity.

This is in accordance with the conclusions drawn from the previous review that broader community-based interventions have better chances to lead to positive results rather than school-based interventions. This result provides some hope that the current upward trend in the prevalence of childhood obesity can be successfully reversed (in some settings, at least) by using types of interventions that nevertheless require better definition and testing in the future.

3.2 The EPODE study (Ensemble Prévenons l'Obésité Des Enfants) - The « EPODE EUROPEAN NETWORK » project

The EPODE Programme developed in France since January 2004 is based on the Fleurbaix Laventie experience, which led to the stabilization of the prevalence of childhood obesity since 1992 in the two involved cities. Thus, the EPODE French initiative is a widespread program involving 10 pilot French cities and mobilizing each and every citizen for a healthier lifestyle: it consists of concrete preventive initiatives made with the help of local stakeholders, setting up prevention at the heart of the city network, under the control of a scientific committee. The entire community is becoming a vector of the prevention strategy developed and proposed by the EPODE programme around a more diversified and balanced food and more physical activities in every day life.

The involvement of municipalities is therefore a springboard for this ambitious programme, which aims to curb the progression of childhood obesity and implement a sustainable new culture of educating children and families on their life habits.

EPODE methodology, mostly based on developing a widespread involvement of training local stakeholders to favour the appropriation of the actions, can be summed up around 4 fundamental steps:

- Informing and making all players aware of the problem and of its solutions,

- Educate the participants to relay the right and positive messages based on international recommendations with the help of trained local experts (local team),

- Taking concrete actions in schools and towns, around the tools and methodologies developed by the EPODE European coordination and also around local initiatives consistent with the program's philosophy and validated by a national scientific committee,

- Assessing the efficiency of the programme by measuring the evolution of the children'sBMI, the number of stakeholders involved and the quality of spontaneous actions undertaken.

EPODE's philosophy is also focused on a positive apprenticeship of a balanced food and physical activities. It pays a specific attention not to stigmatize obese people or children and it aims at helping and concretely advice children and parents on their food choices. The pedagogy is based on apprenticeship through the experience, such as cookery classes, taste experiences, agriculture discovery sessions, family breakfast organized at schools with the monitoring of dieticians, walking to school days, games to be practiced outdoors on WE, adapted school yards, It fosters through cross cutting initiatives a pleasant, affordable and diversified food or joyful physical activities, not only for the children but also for the whole family.

Furthermore, the programme sets up a new philosophy of health prevention closer to the population, where the real life is and every day choices are made in order to obtain sustainable optimal results and involvement of the stakeholders.

Carrying out such a programme is primarily based on the mobilization of existing resources, which translates into quite affordable cost, estimated to be ca. 2€ per person per year.

As a key factor of success, the EPODE programme includes a widespread communication and PR plan yearly meetings in order to stimulate best practices sharing.

The success measured by a large field mobilization in the French pilot cities – more than 1 000 actions have been implemented by the local stakeholders during the past year – leads to consider to widespread a similar programme based on a similar approach in European countries facing a spectacular raise in childhood obesity.

The preliminary results from the EPODE programme in pilot projects that are currently running in France are very promising. More pilot programmes are being / will be started up in Belgium, Spain (2006), Greece and Poland (2007). Knowledge and experience gained in these projects will be used to further adapt the methodology and establish a European standard.

The ultimate goal of the EPODE European Network (EEN) project is to launch the "EPODE European methodology book" that would serve as a basis for the implementation of EPODE programmes in any European (or associated country) city. This handbook would be supported by other structures that facilitate easy access of information (database, website). A European experts committee would be created to ensure the quality of the methodology.

3.3 Other ongoing intervention studies

More recent studies are also showing encouraging results. The KOPS study (Kiel Obesity Prevention Study) combines school-based interventions for overweight children and family-based interventions for their families. The preliminary results of the 4-year follow-up showed a small decrease in the prevalence of overweight in 9- to 11-year-old girls. However, the prevalence of overweight was very high in the non-intervention group (60%), relative to the intervention group (46.2%). The results are not significant for boys (40.2% in the non-intervention group vs. 40.9% in the intervention group).

Another recent study carried out in Crete has published its 4-year follow-up results after a 6-year health and nutrition programme in primary schools; the mean BMI of the intervention group was lower than in the control group.

3.4 The ICAPS study (Intervention Centered on Adolescents' Physical Activity and Sedentary Behaviour)

The ICAPS study is based on the recognition that the context in which the persons live, the so-called 'ecological niche'- this includes family, peers, school and wider social contexts – is important. Models indicate that these can influence adoption of an active lifestyle. Changes in every day physical activity are important in the health perspective. The ICAPS programme was established to reduce weight gain and cardiovascular risk in 12-year-old adolescents from Eastern France by promoting physical activity with an emphasis on recreational and daily-life physical activity. It is a controlled, ongoing field trial, initiated in 2002 and designed to last four years. Field trials are conducted in middle schools 1st level students from four intervention and four control match schools. The programme, not limited to school settings, involves multiple partners with three objectives: 1) changing attitudes through debates and access to attractive activities during breaks and after-school hours, 2) encouraging social support, 3) providing environmental conditions that enable physical activity.

After two years, data have been collected on 834 students. A significant increase of leisure organised physical activity and of active commuting to/from school >20mn/day associated with a decrease of high sedentary behaviour was observed in intervention adolescents. Simultaneously the risk of being overweight was reduced by 21%.

Two years evaluation of ICAPS demonstrates the feasibility of implementing a multilevel physical activity intervention programme in adolescents and indicates its effectiveness in improving physical activity patterns behaviour and preventing overweight.

3.5 Shape Up Europe

SHAPE UP EUROPE is a new project developed as a direct response to the EU Platform on Diet, Physical Activity and Health to help address childhood obesity in all 25 member states. It was recently announced at the EU-US joint conference *Good Practices: Actions on Diet, Physical Activity and Health* on May 11 and 12, 2006.

SHAPE UP is a 3-year school-community project in 26 cities, which will develop, test and evaluate a new approach to influence the determinants of a healthy and balanced growing up. Children will contribute to changes in their community that are expected to impact their health and wellbeing. The project will involve all EU member states, taking into account different cultural and geographical settings.

SHAPE UP aims to involve pre-school, primary and secondary school children from 4 to 16 years of age and will include a minimum of three schools per city. SHAPE UP will also provide guidelines, materials and finance for specific actions in and out of school, and co-fund with the participating cities the hiring of two dedicated staff members in each city. A SHAPE UP promoting group will be convened with the support of the city council to assist children and families with the development of initiatives. An internet portal will also help promote exchange among teachers and students about activities developed in participating cities, as well as facilitate best practice sharing at the European level. This unique network will extend beyond the project itself as experiences, achievements and results are shared.

Along with P.A.U. and the Danish University of Education, other European research and education institutions will help develop and implement the project: the Hull University; ABCitta; and Schulen ans Netz. SHAPE UP is supported by the European Commission Directorate General for Health and Consumer Affairs. Kraft Foods is also supporting the project through its Kraft Cares community partnership programme.

4 COMMERCIAL COMMUNICATION AND ADVERTISING TO CHILDREN

"What is the link between commercial communication of certain foods to children and obesity, and what effects do the different approaches to advertising to children in the Member States have in tackling obesity amongst children?"

In recent years the growing social and public policy concern about the increase in childhood obesity has been driven by a complex mix of inter-related factors in which changes in lifestyle, changes in diet and changes in marketing and promotion all play their part. Because dietary preferences and eating patterns form early in life and set the stage for an individual's long-term health prospects, the possible influence of food advertising to children has been strongly debated both at Member state level, at Community level and at international as well.

4.1 Research on the effect of television advertising on children's food preferences and choices in the context of rising national and international levels of childhood obesity.

In the EU, the most comprehensive reviews have been conducted in the UK. The Ofcom (Ofcom is the independent regulator of television, radio, telecommunications and wireless communications services in the UK) and Hastings reports independently reviewed a wide range of literature available in English over the past 20 years, and can be considered the most comprehensive research ever done on this subject. Another important one carried out by the Institute of Medecine in the USA confirms their findings.

4.1.1 The Hastings study (2003)

Hastings et al (2003) conducted a comprehensive and systematic review of the evidence regarding food promotion to children entitled 'Review of research on the effects of food promotion to children', which was prepared for the Food Standards Agency.

The author concluded: "There is modest evidence that food promotion has an effect on children's nutritional knowledge. Overall, the weight of evidence suggests that food promotion may have little influence on children's general perceptions of what constitutes a healthy diet, but that it can, in certain contexts, have an effect on more specific types of nutritional knowledge.

There is reasonably strong evidence that food promotion has an effect on children's food preferences. Overall, the better quality studies which addressed this question were more likely to find effects and the lower quality studies were not.

There is strong evidence that food promotion influences children's food purchase-related behaviour. All the studies which addressed this question found evidence of effects.

In all except one study, the effect was in the direction of increasing purchase requests for foods high in fat, sugar or salt; in the remaining study, the effect was in the direction of increasing low fat snack sales, in line with the promotional stimulus examined in the study.

There is modest evidence that food promotion has an effect on consumption behaviour. Effects were sometimes inconsistent and were not found in all the studies, but were found in sufficient studies to suggest that food promotion can, in some contexts, influence children's food consumption.

There is reasonably strong evidence of significant associations between television viewing and diet, and between television viewing and health-related variables (obesity and cholesterol). The majority of studies which examine this question measure only television viewing in general, which raises questions about whether the effect is attributable to food advertising, programme content or the sedentary nature of the activity. However, one study measured the extent to which each subject was exposed specifically to food advertising rather than simply the amount of time spent watching television in general. The study found that the greater a child's food advertising exposure, the more frequent his or her snacking and the lower his or her nutrient efficiency.

There is evidence from higher and lower quality studies that food promotion or television viewing significantly influences children's food behaviour and diet independently of other factors known to influence children's food behaviour and diet. However, there is little evidence to show whether the influence of food promotion on children's food behaviour and diet is greater or lesser than that of other factors.

There is evidence that food promotion causes both brand switching *and* category effects in relation to food preferences and consumption behaviour. Although no study provides a thorough comparison of the strength of both types of effect, both types of effect have been examined independently, and there is reasonably strong evidence that both occur. In other words, the effects of food promotion are not limited to brand switching.

Gaps in the evidence base have been identified. Although it is impossible to provide incontrovertible proof of such effects, the review provides however sufficient evidence to show that food promotion *can* have and *is* having an effect on children, particularly in the areas of food preferences, purchase behaviour and consumption. It is also clear that these effects are significant, independent of other influences and operate at both brand and category level.

Most studies that uncover an effect conclude that this will be a harmful one. However there is also evidence that promotion can have a beneficial effect, as in the vending machine study (French et al 2001) where promotion was shown to encourage a shift to lower fat options. Furthermore, there is no prima facie reason to assume that promotion will undermine children's dietary health; it can influence it, but this influence could just as easily be positive as negative.

4.1.2 The Ofcom report (2004)

Also in the UK, another literature review was prepared for Ofcom entitled 'Advertising foods to children: understanding promotion in the context of children's daily lives' was completed in May 2004 (Livingstone & Helsper, 2004). Together with an earlier report (Livingstone, 2004), research on the effect of food advertising on children's food choice and, ultimately, children's obesity, was examined in the context of the other presumed factors contributing to the explanation for rising levels of obesity.

The study concluded that television advertising has a 'modest direct effect' on children's food preferences, consumption and behaviour. Indirect effects are likely to be larger, but there was insufficient evidence to determine the relative size of the effect of TV advertising on children's food choice, by comparison with other relevant factors such as exercise, trends in family eating habits inside and outside the home, parents' demographics, school policy, public understanding of nutrition, food labelling and other forms of food promotion. The survey also examined parents' attitudes to television advertising and regulation, and found that parents accept responsibility for their children's diets, but believe that increased regulation of food advertising would help them to encourage their children to eat more healthily.

4.1.3 The Ofcom report (2006)

In March 2006, Ofcom updated its 2004 report in order to take into account the fast growing amount of most recent research. The focus is on academic research, primarily empirical, preferably published in high quality, peer-reviewed journals, in the past two years. About 180 new publications were identified.

This review updates Livingstone and Helsper's (May 2004) literature review to Ofcom examining the influence of television advertising on children's food preferences and choices in the context of rising national and international levels of childhood obesity.

The new and updated studies confirm the original findings. The following conclusions have been drawn:

- There is a growing consensus that advertising works in its influence on children's food preferences, diet and health. Given that most advertising to children is for products high in salt, sugar and fat, this influence is harmful to children's health.
- Expert commentators are now convinced that television viewing plays a role in contributing to the problem of children's unhealthy diet.
- Very little is known about forms of food promotion other than in television advertising. This is a crucial gap as promotional strategies diversify.
- The experimental evidence suggests that television advertising has a modest direct effect on children's (age 2-11) food preferences by demonstrating that those exposed to particular messages are influenced in their food preferences when compared with those who did not see those messages.
- Although experiments identify causal relations between advertising and food choice, it remains unclear how these operate along side the complex conditions of daily life at home and school.
- A growing body of well-conducted national and international surveys shows a modest but consistent association between overall television exposure and weight/obesity. This applies among children and teenagers.
- It remains unclear whether this association reflects the specific influence of exposure to television advertising or whether it is due to increased snacking while viewing or to a sedentary lifestyle with reduced exercise.

- In both experimental and survey studies, the measured effects of advertising/television on food choices are small. Estimates vary, but some suggest that such exposure accounts for some 2% of the variation in food choice/obesity.
- Cumulatively, this may make an appreciable difference to the number of children who fall into the 'obese category'. Further, this effect may be larger than the measurable effect of exercise and some other factors.
- Multiple factors account for childhood obesity. Television viewing/advertising is one among many influences on children's food choices. These other factors include individual, social, environmental and cultural factors, all of which interact in complex ways not yet well understood.
- Rather than asking simply, does advertising influence children's diet, it is recommended that research and policy instead asks, what are the multiple factors that contribute to children's diet and, within this broader picture, what is the role of food advertising/ promotion?
- A range of interventions are now being tested, in the concerted effort to improve children's health. Many call for more positive health messages, and for a reduction in the promotion of foods high in sugar, salt and fat, as part of this wider effort.

From this, Ofcom concludes: "there is now a growing body of evidence of the links between television advertising exposure and children's food preferences. It is also clear that whilst television advertising of food to children is declining each year, it remains significant; television is still the key medium for communicating messages about food and drink products to the widest audiences."

In the meantime, the market has already produced a significant shift in the balance of television food promotion to children: the overall volume of food, drink and restaurant advertising to children dropped by around 13 per cent in 2005; and a number of food and soft drink manufacturers have voluntarily decided to withdraw from television advertising in children's airtime.

4.1.4 The IOM report (USA, 2005)

In the USA, the Institute of Medicine (2005) also published a wide-ranging and substantial review in a report entitled 'Food Marketing to Children and Youth: Threat or Opportunity?'. The study was requested by Congress and sponsored by the Center for Disease Control (CDC).

The committee assessed hundreds of relevant studies and rigorously reviewed evidence from more than 120 of the best designed to determine what effects marketing may have on children's diets and health. Most of these studies focused only on television advertising, a shortcoming that should be addressed in future research, given that marketing strategies are rapidly evolving and now employ many tactics beyond television advertising.

The report finds strong evidence that television advertising influences the food and beverage preferences and purchase requests of children ages 2 through 11 years old and affects their consumption habits, at least over the short term. Most advertising geared toward children promotes high-calorie, low-nutrient foods, beverages, and meals, which, the committee concluded, influences children to request and choose

these products. There is not enough evidence to determine the extent to which marketing influences the preferences and consumption habits of 12- to 18-year-olds; too few studies have focused on teens.

The evidence on whether television advertising directly affects children's long-term dietary patterns is limited and less conclusive. However, nutrition studies show that America's children and youth are consuming too many calories and too much added sugar, fat, and salt. Moreover, they are consuming less-than-recommended amounts of many key nutrients, including calcium, vitamin E, and fibre.

The report notes that available studies are too limited to determine whether television advertising is a direct cause of obesity among children. However, the statistical association between ad viewing and obesity is seen as strong. Even a small influence would amount to a substantial impact when spread across the entire population.

4.2 Different approaches to advertising to children in the Member states

There is a strong existing EU legal framework to ensure that advertising and marketing are legal, decent, honest and truthful. This is of particular importance in the case of children so as to ensure that they are not misled. The key pieces of legislation are the Television Without Frontier (TWF) Directive, the Misleading Advertising Directive and the Unfair Commercial Practices Directive. This solid legal framework, transposed into national legislation in the Member states, is complemented by advertising standards (commonly known as 'advertising self-regulation'), which operate at national level and set more detailed rules for responsible advertising and marketing, in accordance with the national legal frameworks, customs, traditions and cultural sensitivities. Some countries have a longer tradition of advertising self-regulation and self-regulation is more effective in some countries than others. EU enlargement provided an additional challenge to the implementation of effective advertising SR across Europe. In 1995 self-regulatory organisations were present in 13 EU Member States, in 2005 there were 18, and by the end of 2006, there will be 22.

One country in the EU has adopted total ban of advertising to children, which is Sweden, since 1989. But childhood obesity rates are not lower than in other EU countries where such advertising restrictions do not exist and continue to rise.

4.3 Effects of the different approaches to advertising to children in the Member States in tackling obesity amongst children

Based on studies' findings that TV advertising has a modest direct effect on children's food preferences, consumption and behaviour and despite the fact that there is no scientific evidence to demonstrate that advertising restrictions could impact the incidence of obesity, the impact of food advertising to children is still strongly debated all across the EU.

This keeps triggering the implementation of new measures geared at strengthening the existing self-regulatory codes, most of which have recently been updated.

Through the Advertising Roundtable, the EU Platform on Physical Activity and Diet has initiated a process, which brings in all stakeholders to define a best practice model (in terms of funding, code drafting, publication of decisions, etc.) for advertising self-regulation with a view to rolling out this model across Europe. It

incorporates concerns of all stakeholders (industry, civil society, etc.) and will lead to an EU-based approach.

Also, following the extension of the EU in 2004, the EASA Advertising Self-Regulation Charter was adopted. It is based on the globally accepted codes of marketing and advertising of the International Chamber of Commerce (ICC). Since then, significant effort and resources were devoted to the implementation of the Charter across the EU. Its provisions have first been implemented in 8 Member States. By the end of 2006, implementation will be complete in 23 out of 25 Member States. In 2005, the remit of the ICC Framework was extended to cover all marketing communications in Europe. It is expected that the extended provisions will be implemented in at least 20 Member States by the end of 2007.

There are also a number of propositions for new restrictions, which are under consideration and discussion in various countries. As an example, Ofcom (UK) is just ending a consultation on a range of core options for different types of volume restriction. France is considering tax measures in order to support the financing of public campaigns on healthy lifestyle and diet. Measures to restrict the advertising of a certain type of food/beverage product, e.g. a ban on advertising of energy-dense/micro-nutrient poor foods, i.e. nutrition profiling, is also under debate.

4.4 Conclusion

As discussed above, the latest academic and empirical research (Hastings 2003, IOM 2005, OFCOM 2006, etc) compounds the evidence that advertising bans are ineffective in combating excessive or unbalanced consumption and unhealthy lifestyles. The Ofcom report concludes that a ban would be "both ineffective and disproportionate in its wider impact".

Empirical evidence also shows that advertising bans do not affect obesity rates. Despite bans on advertising to children in Sweden, Norway and Québec, childhood obesity rates in these countries/regions are not lower than in other similar countries/regions where such advertising restrictions exist, and continue to rise inexorably.

As well as there is no link proven between TV advertising and obesity, there is no scientific evidence to demonstrate that advertising restrictions could impact the incidence of obesity.

Consequently, the debate on food marketing to children has evolved and somewhat shifted away from new restriction approaches only. It is focused on one question: what is the most effective and quickest way to bring a change in the nature of foods which are promoted to children (voluntary company/sectorial commitments, industry-wide self-regulation agreements or regulatory intervention)? Encouraging the use of advertising to promote balanced diets and healthy lifestyles, investing in public awareness raising consumer information and educational programmes for children in particular are being considered.

5 ADDED VALUE OF EU ACTIONS

"Considering the relevance of socio-economic factors, what added value can EU actions bring and what immediate action can be taken at Community level? How can/do EU programmes and funding (such as structural funds, research funding) influence/ promote or possibly hamper actions in the Member States geared at tackling obesity and promoting a healthy lifestyle? Is there EU legislation that obstructs certain initiatives and actions to be taken in the Member States?"

The following comments and suggestions are primarily focusing on actions related to the issues addressed in the previous sections of this briefing paper. Consequently a number of other potential actions, mostly regarding diet and nutrition, are not addressed.

The increasing prevalence of obesity is a challenge for society; a critical success factor for interventions or programmes is the strong commitment needed from all involved parties to work responsibly and constructively with other stakeholders and Authorities to help find solutions to the complex issues surrounding obesity. The multifactorial nature of causes related to unhealthy dietary habits and physical inactivity calls for a multi-stakeholder response.

There is increased recognition of the importance of taking into account the context in which the person lives, the family, the school and wider social contexts such as the community when implementing preventive strategies targeting lifestyles. Local-community-based interventions such as EPODE, KOPS, ICAPS, etc. which demonstrated efficacy and effectiveness should be the focus of any Community policy and disseminated. Policies that focus solely on food and food marketing will not be effective in addressing all the different causes and factors related to overweight, obesity and chronic diseases.

A decisive factor in any solution's success is whether the solution offers a possibility of reaching people directly. Ultimately, each consumer is responsible for ensuring that his or her own lifestyle is a healthy one. Parents have a similar responsibility for their children. Therefore, policy areas within the responsibility of Member States, and local initiatives, have the ability to play a decisive role in solving the problem.

It seems increasingly clear that initiatives at the local level tend to be more successful. At the local level, a wide range of areas of life (nurseries, schools, transportation system, sports associations, local press, food sector, health-care system, etc) can be interconnected in effective and visible ways. For example, the EPODE project, which has been a demonstrable success, validates such an approach. The North Karelia Project in Finland is another good example. It started in 1972 as a project to prevent cardiovascular disease among residents of a province of Eastern Finland. The Finnish Heart Association coordinated the initial discussions, which included community representatives, national experts, and several representatives of the World Health Organization (WHO). Later, the program expanded to include other non-communicable diseases. The project has shown that high rates of heart disease are not inevitable; community-based projects guided by experts can reduce rates dramatically. For example, cardiovascular mortality rates for men aged 35-64 decreased 57 percent from 1970 to 1992. The project also contributed to policy changes in health, agriculture, and commerce within Finland as a whole.

For example, the food industry collaborated with the project to promote low-fat dairy products and sausage as well as salt reduction in several foods. The project shows that major change is possible in behaviours associated with heart disease. In 1972, some 90 percent of the population used butter on their bread; in 1992 only 15 percent did so. Fruit and vegetable consumption increased from about 20 kg per person annually in 1972 to 50 kg in 1992. Smoking dropped dramatically among men but actually increased among women. The North Karelia Project has provided examples of approaches to training and dissemination for other groups interested in community-based health promotion. It was a good source of inspiration for the Fleurbaix Laventie study, as well as for EPODE or the national health and nutrition plan in France (PNNS).

In this context, a lot of attention has been paid to diet and nutrition but far less so to the issue of physical activity. There is increased recognition of the importance that moderate physical activity levels in daily life play in preventing obesity. As an example, the Green Paper emphasizes that only about one third of schoolchildren appear to be meeting physical activity recommendations. It is critically important that intervention strategies increase the level of physical activity in children, adolescents and adults, especially in the school environment.

Efforts in two policy areas in particular – namely, education and health - can play a role in providing support to citizens. These are key areas, because all citizens can be reached via schools and the health-care system. Data on the prevalence of overweight indicate that segments of society with low educational levels tend to be particularly higher risk groups to overweight, obesity and related chronic diseases. As a result, the challenge is to adapt educational programmes to specific needs and targets.

A number of issues could be addressed at Community level since problems such as overweight affect all Member States to similar degrees. In particular, the Community could support research into successful strategies and help ensure that measures in Europe are carried out more efficiently. Also, as the Green Paper reveals, the EU lacks sufficient data regarding many relevant individual aspects. Certain types of data are required before suitable solutions can be developed. On a basic level, there is also a lack of Community criteria for the collection of prevalence data, as well as of surveys of general eating habits that could lead to comparable bases for assessment and, thus, for decisions. The real factors behind the high prevalence of overweight in children, adolescents and adults are still not really understood. Strategies for counteracting the problem of overweight, if they are to be successful and lasting, must be based on a better understanding of such factors.

Additionally, there is a shortage of dieticians/nutritionists who can not only undertake the work but also provide training to other health professionals in nutrition. The Commission could encourage schemes that educate health professionals in nutrition.

There is also a need for greater understanding of all the obesity-related factors, the determinants that affect food choice, factors leading to insufficient physical activity in every-day life, and what the effective solutions are.

Understanding consumer motivations and barriers and developing approaches to empower consumers to adopt new lifestyles and behaviours is absolutely necessary to the success of initiatives going forward.

The availability of playgrounds and physical activity spaces, traffic control for safe areas for children to walk or play, changes in school curricula to include physical education and nutrition education, etc… are some of the interventions to be considered at Community level.

There is much evidence that such interventions should not only be about nutrition and physical education but about adopting healthy communities, e.g. urban planning to encourage exercise, TV campaigns to inform the public of the importance of adopting healthy lifestyles etc.

More information is needed to better understand consumer motivations and barriers to adopt new healthy lifestyles and behaviours.

Here are some key areas where there is a critical need to conduct additional research:

- The need to better understand all obesity related factors, including:
  - food choice determinants
  - barriers to adopting a healthy lifestyle
  - drivers to motivate consumers to adopt healthy lifestyles
  - lifestyle factors leading to insufficient physical activity levels
- The need for Community criteria for the collection of prevalence data (currently there are different criteria in different Member States which makes the comparability of data difficult).
- The need for more data on the link (or absence of a link) between commercial communication and obesity.
- The need for more research on consumer understanding and information about diet and nutrition.

6 REFERENCES

1. Etude ABENA (Etude Alimentation et Etat Nutritionnel des Bénéficaires de l'Aide alimentaire) Bulletin épidémiologique hebdomadaire 21 mars 2006 http://www.invs.sante.fr/beh/2006/11_12/beh_11_12_2006.pdf
2. Ashton D (2004) Food advertising and childhood obesity. J Royal Soc Med 97(2): 51-52
3. European Commission Green Paper : "Promoting healthy diets and physical activity: a European dimension for the prevention of overweight, obesity and chronic diseases" COM(2005) 637 final
4. CNA (2006) Avis No 55 du Conseil National de l'Alimentation « Propositions de mesures pratiques pour la mise en oeuvre d'une Stratégie nationale de prévention de l'obésité infantile » http://www.agriculture.gouv.fr/spip/ressources.publicationsofficielles.avisduconseilnationaldelalimentationcna_r381.html
5. Darmon N, Briend A, Drewnowski A. (2004) Energy-dense diets are associated with lower diet costs: a community study of French adults. Public Health Nutr. 7(1):21-27
6. Doak et al. The prevention of overweight and obesity in children and adolescents: a review of interventions and programmes. Obesity Reviews 2006; 7(1):111-136
7. Drewnoski A, Darmon N. (2005) The economics of obesity: dietary energy density and energy cost. Am J Clin nutr. 82 (suppl): 265S-273S
8. Drewnowski A, Darmon N, Briend A.(2004) Replacing fats and sweets with vegetables and fruits-a question of cost. Am J Public Health 94(9): 1555-1559
9. EASA, the European Advertising Standards Alliance http://www.easa-alliance.org/
10. Le programme EPODE: http://www.villesante.com/epode/
11. EURODIET (2001) - Nutrition & Diet for Healthy Lifestyles in Europe : the EURODIET Evidence. Public Health Nutrition Vol 4. 2(A) and 2(B) http://eurodiet.med.uoc.gr/
12. Fleurbaix Laventie Ville Santé 1992-2007 : http://www.flvs.fr/
13. Goede et al. (2003) Multifactorial Intervention and Cardiovascular Disease in Patients with Type 2 Diabetes. N Engl J Med 348(5): 383-393
14. Hastings et al. (2003) Review of Research o the effects of food promotion to children – Final report to the Food Standards Agency 22nd September 2003 http://www.foodstandards.gov.uk/multimedia/webpage/academicreview#h_5
15. IOM (Institute of Medecine) Report: Food Marketing to Children and Youth: Threat or Opportunity? http://www.iom.edu/CMS/3788/21939/31330.aspx
16. Janssen, I. Et al. (2005) : Comparison of overweight and obesity prevalence in school-aged youth from 34 countries and their relationships with physical activity and dietary patterns. Obesity Reviews, 6 (2), 123-32
17. Kahn et al. (2002) The Effectiveness of Interventions to Increase Physical Activity: A Systematic Review Am J Prev Med 22(4S)
18. Koletzko, B. et al. (2004) : Nutrition in children and adolescents in Europe : what is the scientific basis ? Introduction. Brit J Nutr 92 (Suppl. 2), 67-73
19. KOPS, the Kiel Obesity Prevention Study: http://www.uni-kiel.de/nutrfoodsc/nutrition/publications-e.htm

20. Lachat C et al. (2005) A concise overview of national nutrition action plans in the European Union Member States. Public Health Nutr May 83(3): 266-74
21. OFCOM (2006) Television Advertising of Food and Drink to Children: Options for new restrictions http://www.ofcom.org.uk/consult/condocs/foodads/update/
22. Le Programme National Nutrition Santé (PNNS) http://www.sante.gouv.fr/htm/actu/34_010131.htm
23. Robertson A, Tirado C, Lobstein T et al. (2004)Food and health in Europe : a new basis for action. World Health Organisation (WHO) Europe, Regional 273 publications European series No. 96
24. SHAPE UP EUROPE : http://www.shapeupeurope.net and http://www.paueducation.com/content/index.php?option=com_content&task=view&id=19&Itemid=37&lang=es
25. Stevens J et al. (2006) The defintion of weight maintenance. Intern J Obes 30: 391-399
26. Visscher et al. (2004) Obesity and Unhealthy Life-Years in Adult Finns, an Empirical Approach. Arch Intern Med 164: 1413-1420
27. Visscher T and Seidell J (2001). The Public Health Impact of Obesity. Annu Rev Public Health 22: 355-375
28. WHO (2004) Global Strategy on Diet, Physical Activity and Health, resolution of the Fifty-seventh World Health Assembly
29. WHO (2002) 'Diet, nutrition and the prevention of chronic diseases', Report of the joint WHO/FAO expert consultation – WHO Technical Report Series N° 916 http://www.who.int/dietphysicalactivity/
30. WHO (2004) Marketing Food to Children: the Global Regulatory Environment, by Dr Corinna Hawkes

7 GLOSSARY

Body Mass Index or BMI: the BMI is the measure of the relationship between a person's height and weight that is associated with body fat and health risk. It is calculated by dividing weight in kilograms by the square of height in meters, i.e. BMI = weight (kg)/[height (m)]^2.

Case-control study: A type of epidemiological study in which the exposure of patients to factors that may cause their disease (cases) is compared with the exposure of subjects without the disease (controls) to the same factors.

Cohort study: Prospective observational study in which data on exposure to suspected causes of e. g. a disease are collected in a selected/recruited group of people who do not yet have the disease(s) under investigation. The subjects are then followed for a period of time, after which it can be assessed whether development of disease is related to the (presence of) suspected causes.

Epidemiology: The quantitative study of health and the occurrence of diseases and their predictors and causes like environmental, lifestyle or genetic factors.

Health: a state of complete physical, mental and social well-being and not merely the absence of diseases or infirmity (WHO definition).

Intervention study: Study in which investigators intervene by allocating and establishing one or more treatments ("interventions") to or in certain subjects. See also 'observational study'. See also 'randomised controlled trial'.

Morbidity: Incidence of disease in a population, including both fatal and nonfatal cases. Morbidity rates are the number of cases of an illness, injury or condition within a given time, usually one year. It is also the ratio of sick persons to well persons in a defined population.

Mortality: The incidence of death from specific causes or diseases.

Obesity: An excessive accumulation of body fat, often defined as a body mass index (BMI) greater than 30. BMI is the ratio of body weight in kilograms to height in meters squared.

Observational study: In an observational study, researchers do not intervene but only observe outcomes of interest and – the levels of – their suspected causes, e. g. cohort or case-control study. Observational studies are often loosely referred to as epidemiological studies.

Prevalence: The number of people with a disease at a given time, or at any time in a specified period, divided by the number of people at risk from that disease. It is often expressed as rates per million population.

Randomised controlled trial (RCT): Study design in which subjects are randomly allocated to study groups. As a result the groups will expectedly not differ systematically, except with regard to an intervention that one group will undergo and the other will not. As a result, the effects observed can principally be ascribed to the intervention.

8 ANNEX 1

Table 2 : Examples of healthy lifestyles campaigns carried out across Europe (Source: EUFIC Database)

Country, Funding body and project name	Industry funding	Involved parties	Topic	Message	Time-line	Components	Evaluation
AUSTRIA Federal Ministry of Health and Women www.bmfg.gv.at	No	Academics/food scientists, sports bodies, nutrition advisers	Austrian Nutrition Day "Eat Yourself Healthily	Overcome your own inner inertia, exercise, reduce stress, eat healthily	One-off event	Exhibition stalls, personal advice, education material, presentations	No formal evaluation, but integrated into government's five pillars of disease prevention: healthy food, regular exercise; relaxation; accident prophylaxis and medical check-ups.
AUSTRIA Austrian Consumer Association www.konsument.at	No	Cooperation with "Fund Healthy Austria"	Good Nutrition, Help against Obesity	Respect the food pyramid, have balanced diet	Ongoing	Nutrition hotline, the number of which is being advertised	
AUSTRIA Austrian Walking Platform for Women www.oesterreichischer-frauenlauf.at	Yes	Corporate sponsors	Fit in 12 weeks through walking and running, one-off mass walking event in 2006	The earlier in life you start exercising the better for your health	Several walking events throughout the country	Voucher for friends to register in walking event for free; promotion of walking and running equipment	
AUSTRIA Federal Ministry of Health and Women www.innererschweinehund.at	No	Corporates, doctors, pharmacists, food scientists etc.	Disease prevention through healthy eating and lifestyle	"Overcome your inner laziness", eat healthily and consciously, exercise to prolong your life	Ongoing	Website, books, leaflets, events, games that are co-sponsored	
AUSTRIA Minister of Health www.fgoe.at	No		the campaign covers all aspects of healthy lifestyle and disease prevention		Ongoing	TV-spot, internet portal, brochures, magazine, press conferences,…)	
BELGIUM www.komimo.be	No	The website is run by a number of organisations: Trage Wegen vzw, Autopia, Mobiel 21, De Fietsersbond, Taxistop, Bond Beter Leefmilieu, Voetgangersbeweging,	The website promotes biking and walking.	Promotes biking, walking etc.	Estalished in 1996.	A website is being run. The organisation is also organising two different theme weeks. "Week van Vervoering" which promotes less expensive means of transportation (more expensive does not necessarily mean that it is more environmentally friendly and healthy). "Week van	The campaigns have been going on since 1996.

Country, Funding body and project name	Industry funding	Involved parties	Topic	Message	Time-line	Components	Evaluation
		Bond Trein-, Tram en Busgebruikers.				zachte Weggebruiker" which has at its core environmentally friendly mobility.	
DENMARK National Board of Health 30 minutes a day http://www.sundhedsstyrelsen.dk/Forebyggelse/Mad_og_motion/Fysisk_aktivitet/Kampagner_og_projekter/30_minutter/30_minutter_2004.aspx?lang=da	No	National Board of Health, local and regional authorities, a large number of organisations, media and private companies, such as Arla (major dairy producer)	Physical activity	Adults need at least 30 minutes of physical activity per day.	June 6-11 2004	TV advertising, daily, 4-minute programme on national TV (during the one-week campaign). Daily quiz show on national TV focused on physical activity during the entire week. Posters and T-shirts, TV ad, special elevator posters telling people to use the stairs.	Comprehensive evaluation available at:http://www.sundhedsstyrelsen.dk/publ/Publ2004/Eval30minkamp2004.pdf The campaign was successful in communicating its key messages - knowledge of these increased.
DENMARK National Board of Health 60 minutes a day http://www.sundhedsstyrelsen.dk/Forebyggelse/Mad_og_motion/Fysisk_aktivitet/Kampagner_og_projekter/60_minutter_2005.aspx?lang=da	No	National Board of Health, municipal authorities, and a large number of local organisations and the Royal family.	Physical activity	60 minutes of physical activity a day for children. Campaigns in 2003 and 2004 focused on getting adults to move 30 minutes a day.	5-11 September 2005	TV advertising, information letter and invitation to schools and childcare institutions, inspirational brochure, flyer, campaign bag containing skipping rope, ball and tips to get started, website.	Comprehensive evaluation available at: http://www.sundhedsstyrelsen.dk/publ/Publ2004/Eval30minkamp2004.pdf Main aims achieved: public knowledge of key messages increased substantially. 20 percent of teachers said kids more physically active.
DENMARK National Board of Health, the Ministry of Education, the Ministry for Family and Consumer Affairs Sign of health "Sundhetstegnet" http://www.sundhedstegnet.dk/	No	National Board of Health, the Ministry of Education, the Ministry for Family and Consumer Affairs and a number of health organisations (heart, diabetes, cancer)	Healthy eating and active lifestyle in childcare institutions	The most important thing is to get started.	2005 - ongoing	Inspirational catalogue, "sign of health" diploma to be framed and displayed in the participating institution	A number of success stories have been published on the internet site
DENMARK The Danish fitness and nutrition council, The National Consumer Agency, Danish Fruit, Vegetable and Potato	No	The Danish fitness and nutrition council, The National Consumer Agency, Danish Fruit, Vegetable and Potato Board, Danish Veterinary and Food	Healthy eating - eat more fruits and vegetables	Six servings of fruits and vegetables every day.	1999-ongoing	Large number of components, including: website, flyers, school competitions, advertising, 500 000 apples distributed in schools on "fruit day", computer game, in-store presentations, fruit and vegetable information cards distributed via	http://6omdagen.dk/kampagne/efteraar_2002/kvantitativ_evaluering_af_distribution_og_modtagelse.pdf

Country, Funding body and project name	Industry funding	Involved parties	Topic	Message	Time-line	Components	Evaluation
Board, Danish Veterinary and Food Administration, Vegetable growers board, Heart foundation, Cancer.dk, National Board of Health 6 a day "6 om dagen" http://6omdagen.dk/index.shtml		Administration, Vegetable growers board, Heart foundation, Cancer.dk, National Board of Health				supermarkets, etc.	
EU Fifth Framework Programme of the European Commission, thematic programme "Quality of Life and Management of Living Resources", key action "Food, Nutrition and Health" ProChildren http://www.univie.ac.at/prochildren/	No	University Hospital, Iceland, University of Vienna, Austria, Universidade do Porto, Portugal, Unidad de Nutricion Comunitaria, Bilbao, Spain, Erasmus Medical Center Rotterdam, Unit for Preventive Nutrition, Karolinska Institutet, Stockholm, Sweden, Ghent University, Belgium	Promoting and sustaining health through increased vegetable and fruit consumption among European schoolchildren (Norway, Spain, the Netherlands)	Eat more fruits and vegetables.	April 2002 through March 2006	Distribution of fruit and vegetables at school, classroom curriculum including a cookbook, a computer-based nutrition education programme for children and a teachers manual. Parents received newsletters and a computer-based fruit and vegetable education programme for adults.	No information available.
FINLAND North Karelia project	Yes	The Finnish Heart Association, WHO, regional and local authorities, medical boards, berry and vegetable farmers, media	Prevention of cardiovascular disease through healthier lifestyles.	Quit smoking, lower cholesterol by reducing salt and fat intake, eat more fruits and vegetables.	1972-ongoing	Cholesterol-lowering competitions between villages, national TV series featuring people volunteering to make lifestyle changes, workplace programmes.	Surveys conducted every 5 years. Results show that the project has been very successful over the long term. Fruit and vegetable consumption increased, smoking decreased, salt intake decreased, the use of hig-fat dairy products fell. The programme is the inspiration for the CINDI projects sponsored by WHO in many countries worldwide.
FRANCE Peugeot Santal	Yes	In cooperation with Sodexho and insurance company Previade-Mutuouest	Healthy Nutrition	Promotion of healthy nutrition among the workforce	2004-2005	Based on a series of lectures and materials on healthy nutrition in the workplace and individual guidance of a dietician	

Country, Funding body and project name	Industry funding	Involved parties	Topic	Message	Time-line	Components	Evaluation
FRANCE Ministry of Health Programme National Nutrition Santé (PNNS	No	Health, education, Agriculture, Research, Sports and Consumer Ministries	Improving nutrition	Increase consumption of fruit and vegetables, increase calcium intake, reduce lipid intake to 35% of total energy, increase fibre by 50%, reduce alcohol consumption by 20g per day, decrease occurrence of childhood obesity and increase physical activity	2001-2005	Document-guide, internet with login,	
FRANCE Coca-Cola Act Against Obesity	Yes		Anti-obesity campaign	New public campaign against obesity, to offer more choices to the consumer, notably drinks with less or no sugar and 'light' version of drinks.	2005	Featured in newspapers	
FRANCE Ministry of Health www.mangerbouger.fr	No		Healthy nutrition and physical activity	Physical activity and healthy nutrition guidelines. Web-based recommendations on nutrition, physical activity and lifestyle.	Ongoing	Published guidelines and dedicated website.	
FRANCE Government, industry Epode' -(Ensemble prévenons l'obésité des enfants, i.e.Together let's prevent childhood obesity) http://www.villesante.com/epode/	Yes		Prevent childhood obesity	Coordinate a series of actions in the local schools aiming at promoting nutritional variety and physical activity	2004	The programme is going to be implemented at first in ten townships with 600 000 habitants altogether. A group of scientific experts are going to be relocated in each of the ten towns. All the children will be measured and weighted at the beginning of the programme and then every year for the next five years, in order to check the effectiveness of the intervention. In 2009, if the results are encouraging, 'Epode' will be extended to other cities.	
FRANCE National Institute of Prevention and Education (INSPES) & Health Minister www.10parjur.net [10 a Day[]	No		Eat fruit and vegetables	Encourage people to eat five-to-ten portions of fruit and vegetables a day.	2001-2005	Posters outlining 'Ten simple suggestions to fight sedentary lifestyles' will be put up in metro stations and on buses in the cities of Paris, Marseille, Nantes, Metz, Poitiers and Saint-Etienne. Communications kits with the same messages will also be sent to 35,000 firms, aimed at	

Country, Funding body and project name	Industry funding	Involved parties	Topic	Message	Time-line	Components	Evaluation
						reaching 10 millions employees	
GERMANY Charity for Child Health, AOK Insurance www.powerkids.de	Yes	AOK Insurance, Academics/food scientists, sports bodies, nutrition advisers	Healthy eating	Being obese is not your own fault, weight reduction can be learnt, no foodstuff is forbidden	Ongoing	12-week game kit that must be purchased and involves parents	
GERMANY University of Kiel www.uni-kiel.de/nutrfoodsc	Yes	Danone Nutrition Foundation, Sugar Association, Federal State of Schleswig-Holstein	Obesity Prevention Study and Pilot Intervention Project	To assess determinants of obesity in children and measure effectiveness of intervention policies	Ongoing	Advice on nutrition, health, exercise; family advice, stress reduction, behavioural changes; medical checks - repeated over longer period	
GERMANY European Commssion, Ministry of Consumer Protection, food industry www.talkingfood.de	Yes	European Commission, German food industry associations, German Society for Nutrition	Nutrition, healthy food and food safety	Raise awareness of healthy eating and lifestyle, physical exercise	Ongoing	Games, leaflets, special events/stalls, children's musical, competition, interactive material, holiday seminars, youth days, school forum	
GERMANY Federal Ministry of Health and Women www.die-praevention.de	No	Famous personalities from business, culture and media	Exercise and health. Germany becomes fit. Join in the walk.	Physical exercise can prevent disease, can be integrated easily into daily routine	Ongoing	Online fitness coaching, recommended walks, commercials in cinema and on TV, dietary tips for everyday	
GERMANY Universities of Paderborn, Flensburg and Heidelberg www.ernaehrung-und-verbraucherbildung.de	No	Federal Ministry of Nutrition, Agriculture and Consumer Protection	Improvement of nutrition and education in schools	Nutrition literacy through teaching materials and changing food in school canteens	Ongoing	Online database, teaching material	
GERMANY Federal Ministry of Nutrition, Agriculture and Consumer Protection www.kinder-leicht.net	No	German Society for Nutrition	Fit Kid, Better eating, more physical activity	Balanced diet and exercise prevent onset of disease	Ongoing	Exhibitions, games, literature, interactive material, advice for schools and kindergardens, teaching material	

Country, Funding body and project name	Industry funding	Involved parties	Topic	Message	Time-line	Components	Evaluation
GERMANY German Olympic Movement www.olympia-bewegt-alle.de	No	German Sports Federation	Promoting physical activity against obesity	"Sport is the grammar of life", "kids in movement"	Ongoing	Cooperation with local sports clubs, schools and youth centres	
GERMANY Germany University for Sport www.chilt.de	No	Insurance companies, doctors' associations, public health charities	Children's health interventional trial to combat obesity	Preventative lifestyle measures necessary to counterbalance disease risk factors (incl. genetic ones)	Ongoing	Programmes for children in primary and secondary schools, incl. sport and nutrition	Methodical assessment of effectiveness of programme, incl. teaching material
GERMANY Energy (gas) suppliers www.erdgaspokal.de	Yes	Municipal authorities, association of cooks	Cooking competition for schools	"Cooking together, enjoying without limits"	Ongoing	Participating schools must cook three-course meal - knock-out competition	
GERMANY Five-a-Day (registered company) www.fuenfamtag.de [5 a day]	No	Over 100 partners from business and healthcare sector	Promotion of five portions of fruit and vegetables a day	Eat more fruits and vegetables.	Ongoing	TV advertising, public awareness campaigns, conferences, 5-a-day days, workshops for children, website.	
IRELAND Food Safety Promotion Board (Government agency) http://www.safefoodonline.com/article.asp?article=1496	No	Food Safety Promotion Board	Healthy eating	Parents are urged to cut down on high fat/sugar/salt 'treat' foods.	2005	Tips and recipes on the Agency's website	No information provided
IRELAND Irish Heart Foundation Irish heart week - A child's heart for life http://www.irishheart.ie/iopen24/catalog/newsdesk_info.php?newsdesk_id=55	No	Irish Heart Foundation, local authorities, schools and organisations.	Healthy eating and active lifestyle	An hour a day for a healthy heart. Use the food pyramid for healthy eating habits.	25 September - 1 October 2005	Magazine aimed at parents entitled Your child's heart for life - with healthy eating and active living. Tips on active lifestyle and guide to the food pyramid on website.	No information provided

Country, Funding body and project name	Industry funding	Involved parties	Topic	Message	Time-line	Components	Evaluation
IRELAND Department of Health and Children - Health Promotion Unit http://www.healthysteps.ie/	No	Politicians, celebrities, farmers, builders and bus drivers. Community Nutrition and Dietetic Service and the Physical Activity Coordinators in the Health Promotion Departments of the Health Service Executive.	Physical activity and healthy eating	Take 5 steps to a healthier you. Small changes make the difference. 5 portions of fruits and vegetable every day. Children should do 1 hour of physical activity per day, but it doesn't have to be done all at once.	September 2004	Interactive website with advice and BMI calculator. Leaflets and posters; materials for schools, workplaces and health professionals; national promotions, competitions and many other localised events	No information provided
ITALY Health Ministry A Balanced Diet Improves your Life	No	Health Ministry	Balanced Diet	"Every day a nice walk, eat only what is necessary, thus small portions. Little salt, lots of fruit and vegetables. Just like the Mediterranean diet."	2003	TV advertising	
ITALY Fimmg (Italian Federation of General Practitioners) and Cia (Italian Confederation of Farmers) Feel Good, Eat Well	No		Healthy eating	Educate young people in particular about better nutrition and healthier lifestyles	2003	advertisements and brochures with practical advice	
ITALY Italian Association of Dietetics and Clinical Nutrition (A.D.I) Obesity Day	No		Fight obesity	National day to fight obesity, will involve the co-operation of 130 nutritional and diet services, on that day at the disposal of the citizens free of charge, a website which the citizens will be able to track the centre for treatment of obesity closest to their residence and a series of nutritional programmes	2003	National day and website	
ITALY Italian Association of Dietetics and Clinical Nutrition (ADI) Check your weight,	No		Fight obesity	4th annual Obesity Day	2004	citizens will be taught how to interpret food labels and nutritional information on food products	Advice on prevention and promote better healthier lifestyles

Country, Funding body and project name	Industry funding	Involved parties	Topic	Message	Time-line	Components	Evaluation
check the labels							
ITALY Ministry of Education Nutrition, movement, lifestyles: instructions	No		Fight obesity	Pilot scheme in schools against obesity	2004	Part of the scheme includes monitoring, analysing and drafting proposals on the individual children's eating habits and lifestyle. The second part involves more directly the class teachers, who will be issued with an illustrated handbook showing children how to exercise at home as well as at school, with the manual divided into three sections (posture, games and gymnastics). All schools will also be issued with a "health kit" including rubber mats and balls.	
ITALY Region Umbria, co-funded by the Department of Medicine of the University, the Regional Council and a private sponsor for 147,000 euros Lifestyle and Wellbeing: between Nutrition and Movement	No		Educate children on healthy lifestyle	Educate children to understand the principles of a healthy lifestyle, nutrition and physical activity	2005	Guided farm tours, cooking laboratories at school, meetings with experts and trials of local food production.	
ITALY Regional Council of Lombardy More fruit and vegetables	No		Nutrition education for schools	Increase consumption of fruit and vegetables at school and in the family	2005	Pilot project vending machines distribute fruits and vegetables in bags	
ITALY The Centre for Studies and Research on Obesity of the University of Milan I Weigh Health	No		Fight obesity	Caravan touring the main cities of the region with specialists on obesity giving free information and advice	2004	Travelling caravan with advice	

Country, Funding body and project name	Industry funding	Involved parties	Topic	Message	Time-line	Components	Evaluation
ITALY National Union of Fruit and Vegetables Producers (Unaproa) and co-funded by the European Union and the Italian Government Nourish Yourselves with Colours of Life	No		Nutritional education on fruits and vegetables	Information on the nutritional value of fruit and vegetables and encourages the consumption of five portions of fresh fruit and vegetables of different colours in order to prevent diseases	2004-2007	Guide will be distributed to customers of 400 selected big retailers across the country, together with books of recipes. The project also envisages an advertising campaign on monthly and weekly magazines with national coverage	
ITALY Publicita Progresso Campagna Movimiento	No		Promoting healthy lifestyles and physical activity	Do physical activity	Ongoing (from January 2006)	TV Spot	
LATVIA Club for Protection of Consumer Interests Good Food Hygiene Practice and Healthy Eating www.consumer-guide.lv	No	Consumers International	Improvement of food hygiene, safety and healthy eating in Latvian schools	Increase fruit and vegetable consumption and food in schools.	Ongoing	Children's preference surveys, advice, publicity, checking labelling	
LATVIA Club for Protection of Consumer Interests Knowledge is Your Protection www.consumer-guide.lv	No	Nordic Council of Ministers	Raise consumer awareness on food labelling and endorsement logos		Ongoing	Publication of brochure "Food labels in Latvia", seminars to promote brochure and advice	
LITHUANIA Lithuanian National Consumers Federation Safe and Good Quality Food Market	No	Consumers International	Raise consumers' awareness of good quality food, encourage producers to act in consumer-friendly way		Ongoing	Annual consumers' fair, advice and publicity projects	
MALTA Funded by the European Commission through the Comenius programme	No	Schools in Malta, Ireland, Hungary, Slovenia and Turkey	Focused on physical activity, but also includes healthy eating	Sport is fun. There is a correlation between values in sports and values in life.	2004-2007 Activities throughout the	Website with a students' corner, physical activity week, large number of activities at local level.	No information provided

Country, Funding body and project name	Industry funding	Involved parties	Topic	Message	Time-line	Components	Evaluation
Active bodies - healthy minds http://schoolnet.gov.mt/active/geninfo.html					school year		
NETHERLANDS Government, EU www.groentenfruit.nl [5 a day]	No	Government, sectoral associations, regional/local authorities, scientific community, nutritionists.	Eat more fruit and vegetables	Encourage people to eat five portions of fruit and vegetables a day.	Ongoing	TV advertising spots, Public awareness campaigns, conferences, 5-a-day days, workshops for children, website.	
NETHERLANDS Government Weet wat je eet [Know what you eat]	No	Voedingscentrum [Government-sponsored, independent agency]	Know what you eat	Encourage awareness of healthy diets among children	Ongoing	Educational programme for schools, website	New campaign, no information available yet
NETHERLANDS Government Gezond Eten, Gezond Bewegen [Healthy eating, healthy activity]	No	Voedingscentrum [Government-sponsored, independent agency]	Eat healthily, do exercise	Encourage healthy diets and physical activity among children	Ongoing	Educational programme for schools, website	No information available
NETHERLANDS Centrum voor Internationale Samenwerking (COS), Nationaal Instituut voor Gezondheidsbevordering en Ziektepreventie (NIGZ), and the Fietsersbond http://www.fietsnaarjewerk.nl	No		Stimulate people to cycle.	Cycle for health and the environment.	The campaign has been running since 2002.	Various information leaflets are available, a website is maintained.	The campaign has been running since 2002.
NETHERLANDS Government Maak je niet dik! [Don't get fat]	No	Voedingscentrum [Government-sponsored, independent agency]	Avoid overweight/obesity	Encourage a healthy lifestyle to avoid gaining weight	Ongoing	Website, information pack, newsletter	No information available

Country, Funding body and project name	Industry funding	Involved parties	Topic	Message	Time-line	Components	Evaluation
PORTUGAL The Portuguese Foundation of Cardiology (FPC) Month for the Heart-Do not die through your mouth	No		National campaign against cardiovascular disease	Aim to raise awareness among the population on the risks of cardiovascular diseases (CVD) caused by obesity. The campaign focuses on messages against unhealthy nutrition, sedentary lifestyle and smoking are the main factors leading to CVD			
SLOVENIA Ministry of Health, The Regional Institute of Public Health Murska Sobota, local municipality Let Us Live Healthily http://www.euro.who.int/socialdeterminants/socmarketing/20051026_2	No	Community coordinator, local shops, schools and childcare units, tourism and catering businesses, churches, local media.	Physical activity and healthy eating	Physical activity and healthy eating habits can reduce non-communicable disease (particularly high in the region)	Ongoing	Weekly workshops, events focusing on how to monitor you health (cholesterol and blood pressure checks), walking activities, local media coverage.	Changes in lifestyles have been achieved; survey shows improvement in eating habits.
SPAIN Catalan Chef Ferrán Adría and Nestlé Part of National Anti-Obese Strategy (NAOS) promote healthy nutrition in schools	Yes	Ministry of Health and Consumer Protection and the Spanish Food Safety Agency (AESA)	A programme of basic nutrition education for schools		2005		
SPAIN Government, EU www.5aldia.com [Five-a-day campaign]	No	Government, sectoral associations, regional/local authorities, scientific community, nutritionists.	Eat more fruit and vegetables	Encourage people to eat five portions of fruit and vegetables a day.	Ongoing, since 2002	TV advertising spots, Public awareness campaigns, conferences, 5-a-day days, workshops for children, website.	
SPAIN Public Health Agency of Barcelona Barcelona Healthy Lifestyles Initiative for Schools	No	Townhall of Barcelona	Healthy Lifestyles in Schools	Promotes healthy habits and prevents eating disorders.	2005-2006	Eight programs	So far, 195 schools - have accepted to take part in such programmes and they will receive free training materials for teacher and didactic materials for children. Overall, 34,000 primary and secondary schoolchildren (aged 6-16) will take part in the programmes this year.

Country, Funding body and project name	Industry funding	Involved parties	Topic	Message	Time-line	Components	Evaluation
SPAIN Spanish Secretary for Sports Stop to think ('Párate a pensar')	No	Children's Villages SOS', Food Safety Agency (AESA) and 'Five A Day'	Promote Physical Activity	Consists of promoting exercise among adolescents in 1,000 high schools and distributing didactic materials to explain why it is necessary to prevent overweight and obesity problems. The programme provides six didactic units split in three parts: relationship with one's body, relationship with the environment and adolescents' participation in the world.	2005	Will address approx. 60,000 students aged between 6 and 12 years old	
SPAIN Spanish Association on Pediatricians Advice for a healthy growth	No		Childhood obesity	Providing information to prevent childhood obesity	2003		
SPAIN Spanish food industry and six national consumer organisations Sumasalud: Vida Activa + Alimentación Saludable	Yes		Promote healthy eating and physical activity	Eat a balanced diet and do enough physical activity.	2005	6,000 information brochures and internet site	
SWEDEN Government, EU www.fruktogront.se [5 a day]	No	Government, sectoral associations, regional/local authorities, scientific community, nutritionists.	Eat more fruit and vegetables	Encourage people to eat five portions of fruit and vegetables a day.	Ongoing	TV advertising spots, Public awareness campaigns, conferences, 5-a-day days, workshops for children, website.	
UK Food Standards Agency www.eatwell.gov.uk	No	Food Standards Agency Eatwell.gov.uk is the Food Standards Agency's consumer advice and information site.	Healthy diet, Ages and stages, Health issues, Food safety, Food labelling	Advice on healthy eating, understanding food labels, make healthier choices.	The Food Standards Agency was set up in 2000. The Agency's first strategic	The Agency carries out or commissions extensive scientific research and survey work. The Agency runs the eat well website. The Agency employs in-house experts to work on the priority food safety issues and also to keep an eye on the horizon for new developments. In the budgetary period of 2001-2006 the	No information available.

Country, Funding body and project name	Industry funding	Involved parties	Topic	Message	Time-line	Components	Evaluation
					plan covers the years 2001 to 2006.	aims of the programme are to: - reduce food borne illness by 20% by improving food safety right through the food chain, - help people to eat more healthily, - promote honest and informative labelling to help consumers, - promote best practice within the food industry, - improve the enforcement of food law, and - earn people's trust by what FSA does and how they do it.	
UK Food and Drink Federation www.foodfitness.org.uk	Yes	FDF	How to make people look better and feel better about themselves, how to feel fitter and have energy to do more, better control weight, improve body shape, reduced stress and improve mood, reduce risk of heart diseases, less risk of osteoporosis	Promote enjoyable, healthy eating combined with increased moderate physical activity. Positive and non-judgemental key messages. A healthy lifestyle is fun, easily achievable and affordable.	1996 - ongoing	Food fitness is based on sound science and has developed from current research on healthy eating and physical activity. FDF has established a panel of experts in nutrition and physical activity to act in an advisory capacity from the food and drink industry. Food fitness features two cartoon families, the Activaters and the Dolittles in their everyday lives: The Activaters are the positive role models. Activaters enjoy a wide variety of different foods and drinks and know how to include their favourite foods into a balanced diet. Activaters show us that a healthy lifestyle doesn't need to be dull, demanding, extreme or expensive. The Dolittle family like to sit down, put their feet up and watch TV or play computer games. Dolittles are not very organised with their food and tend to eat the same foods every day. They rarely eat fruit and vegetables.	No information.
UK Government, NHS www.5aday.nhs.uk	No	Government, NHS, sectoral associations, regional/local authorities, scientific community, nutritionists.	Eat more fruit and vegetables	Encourage people to eat five portions of fruit and vegetables a day.	Ongoing	TV advertising spots, Public awareness campaigns, website.	

Country, Funding body and project name	Industry funding	Involved parties	Topic	Message	Time-line	Components	Evaluation
UK Food Standards Agency Sid the Slug	No	FSA	Salt reduction	Eat less salt	2005	TV Advertising campaign and website (www.salt.gov.uk), and challenging food industry to reduce salt levels	No information

9 ANNEX 2

The Prevention of Overweight and Obesity in Children & Adolescents : A Review of Interventions and Programmes: The Doak et al review[1]

Among other examples, a review to identify aspects of successful childhood overweight prevention programmes has very recently been published. Preventing overweight and obesity requires understanding and addressing the 'obesogenic environment' in which children live. Environmental factors take precedence in prevention efforts because they provide the most potential for the greatest impact. The focus was on population-based prevention childhood overweight and obesity prevention programmes, particularly interventions that address environmental determinants and can be applied on a large scale and are sustainable (preferably multi-sectorial).

Inclusion criteria were: 1) focus on school-aged children (6– 19 years of age); 2) have a quantitative impact assessment; 3) include an intervention on a diet or physical activity-related behaviour or both; and 4) be monitored and evaluated in a documented manner, i.e. as a published paper or with publicly accessible documentation.

Consequently, this review was purposely limited to school-based studies with a quantitative evaluation using anthropometric outcomes and that intervene on diet or activity related behaviours. 25 published interventions programmes meeting the selection criteria were identified (among over 100). The majority of overweight/obesity prevention programmes included in this review was "effective" (17 of the 25) based on a statistically significant reduction in body mass index (BMI) or skin-folds for the intervention group. Four interventions were effective by BMI as well as skin-fold measures. Of these, two targeted reductions in television viewing. The remaining two studies targeted direct physical activity intervention through the physical education programme combined with nutrition education. Of the interventions reported here, one was effective in reducing childhood overweight but was also associated with an increase in underweight prevalence. Few other studies reported outcomes for underweight. Physical education in schools and reducing television viewing are two examples of interventions that have been successful.

<u>The criteria used for evaluating interventions were:</u>

- Does the intervention address dietary habit, physical activity patterns and television viewing of children?
- For interventions that include physical activity intervention, does the intervention include activities inside and outside school?
- Does the intervention seek to change behaviours by changing the physical, economic, or sociocultural environment?

---

[1] *Colleen M. Doak, Tommy LS Visscher, Carry M. Renders, Jacob C Seidell. The prevention of overweight and obesity in children and adolescents: a review of interventions and programmes. Obesity Reviews, Volume 7, Number 1, pages 111-136, 2006*

- Is the programme sustainable over time at the structural and institutional level with minimal additional inputs?
- What is the level of involvement from the participants, parents, teachers and/or the broader community?
- Is the intervention a primary prevention programme tailored to the needs of the local community, schools and/or families that are included in the target population?
- To what extent does the intervention address family and individual level factors?
- Does the intervention have multiple focal points and levels of intervention, including national, regional, and community levels?
- Does the intervention build links between sectors by involving multiple organizations/groups that may be otherwise viewed as independent?
- Does the intervention reach all children within the community?
- Is there potential for integrating the programme into existing initiatives? Did the programme tap into existing initiatives or pre-existing programmes?
- Did the programme build on existing theory and evidence?

Comparisons of effective and non-effective interventions based on the first 10 questions used in the analysis ended with seventeen interventions categorized as effective. Thus, over half of the interventions (68%) showed a statistically significant result for at least one time point or subgroup. However, the results do not show any clear patterns based on the first 10 questions. Some specific aspects are discussed below.

Key learnings on specific aspects of the studies:

Dietary vs. physical activity interventions

The effectiveness of exercise intervention only versus education intervention only, and exercise plus education intervention was tested. In one study, the exercise-only group was shown to be effective based on skin-fold measures. Another review found the opposite, showing a significant reduction in triceps skin-folds in the group receiving the fitness plus school nutrition programmes. The other five programmes, fitness only, school nutrition only, school nutrition plus home nutrition, and home nutrition only did not result in significant reductions in skin-folds or BMI measures.

Delivery of the intervention

Two means of transmitting health information, written action (only printed material) and Multimedia Action School (adding audiovisuals and discussion meetings with families and teachers) were tested . A statistically significant decrease in obesity and overweight was observed in the Multimedia Action School . But in another example, the Child and Adolescent Trial for Cardiovascular Health (CATCH) study, comparing interventions targeting school-based or school plus family-based interventions was not effective.

Target population

These studies indicate potential differences in intervention effects according to gender, age and ethnicity. Five studies showed differences in the effectiveness in boys vs. girls. Of these, three were effective in girls and not boys and two were effective in boys but not girls. The two studies that were effective only for boys indicate these results may be related to the physical activity focus. The article explains the gender difference as an expected result related to an intervention focusing primarily on physical activity.

The fact that five studies showed different results by gender indicates a need for further tailoring of these interventions by gender. Another intervention found a trend of increasing BMI in African American children but no such trend for Caucasian or Hispanic children. The potential for ethnic differences in intervention effects warrants further investigation. The differences in results by gender and ethnicity may also be partly related to differences in maturation that are not adequately measured. However, the results might also indicate the need to better tailor primary prevention programmes to the individual needs of children, or according to gender and ethnicity.

Integrating overweight/obesity prevention into existing initiatives

The final assessment was to consider whether or not the interventions integrated the programme into existing initiatives. A number of obesity and overweight prevention programmes were integrated with smoking cessation programmes. Of the 10 studies with a smoking cessation component seven were effective for obesity prevention and three were not. Of the four studies using the 'Know Your Body' Programme two were effective and two were not. A number of programmes were physical activity interventions integrated into the school's existing physical education programmes.

Of these eight were effective and four were not. Five studies made adaptations to existing school lunch programmes but only one was effective.

Sustainability

Most of the studies were primary prevention programmes with a school-based intervention. Of these, 75% (12 out of 16 studies) are effective. Costs are an important aspect of sustainability. In one study, the intervention was designed to maximize effect without increasing resources or personnel. Although not effective by body weight outcome measures, the changes to the school lunch programme resulted in statistically significant improvements in diet according to multiple measures. Furthermore, serving healthier food did not reduce student participation rates for the school lunch programme. In another study, Sallis *et al*. identify costs related to changes in the school food services as the single largest policy barrier. 'Schools took a financial risk when introducing new products, especially perishable fruits, and they were unable to conduct marketing activities… to build demand for low-fat products.

Additional barriers to effectiveness and sustainability relate to community level factors not addressed by the interventions. Bush *et al*. provide insights into the difficulties faced by education-based prevention programmes related to the stigmatization of obese children. Teachers are unlikely to emphasize weight problems because of the embarrassment to obese children. Unless weight has been lost, there is little motivation for obese children to participate in a program that provides them with negative feedback at three of the five screening stations, i.e. weight for height, triceps skinfolds, and fitness. Furthermore, in as much as children may feel stigmatized, the programme may also stigmatize teachers.

Bush *et al*. point out that although the programme was designed to prevent smoking and obesity, all of the health teachers involved were smokers and most were obese. Other studies do not report the overweight/obesity prevalence of the persons teaching the classes or other socio-demographic characteristics of those implementing the intervention. Nor do the interventions report the obesity prevalence or lifestyle behaviours of adult role models, such as parents, teachers or community leaders. These factors may be important to children's perceptions of education-based messages, community support, and long-term sustainability of the programme. Two studies address the issues of school burdens related to overweight/obesity prevention. Additional limitations to sustainability are concerns about limited time in the school curriculum.

TV viewing

All three programmes that attempt to reduce television viewing were effective, even when this was done through education. Although this is a small number of studies, it indicates the need for inclusion of television viewing and illustrates potential for education programmes to impact behaviour. Two of these trials were implemented in the USA where, compared with other countries, children watch more hours of television, the number of television sets per household is higher, and there are more advertisements shown.

Parental involvement

Parental involvement differs from one study to the next and level of involvement is difficult to compare. Thus, the extent to which caregivers' involvement contributes to programme effectiveness, based on the articles reviewed by Doak et al., is not clear. However, parental involvement should be encouraged, as parental support is helpful for the continuation of most school-based programmes. Evidence suggests that eating behaviours are shaped by care-givers. Furthermore, care-givers directly determine a child's lifestyle, environment and body weight through food selection, home eating patterns, meal structure, responsiveness to child's feeding cues, and general parenting styles. Future interventions need to address the psychological and environmental influences of the home environment through education and active involvement of parents, even in a school-based intervention.

Conclusions and recommendations

Conclusions and recommendations are addressed in the core report in paragraph "2.2 Intervention programmes" on page 5.

+++