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EPODE
for the Promotion of Health Equity

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EPODE for the Promotion of Health Equity

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Contents

Part 2, Epode for the Promotion of Health Equity project

Part 3, Evaluation Framework and Results

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Foreword

John F. Ryan

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Addressing health inequalities throughout the European Union remains a priority for the European Commission. Health inequalities can to a significant extent be prevented or minimised, both between population groups and between different EU Member States. Action to reduce health inequalities must take a holistic approach and cannot rely solely upon public policy and the health sector. All stakeholders such as individuals, communities, companies and governments, have a significant role to play. Nevertheless, despite efforts in the recent past, health inequalities remain a major challenge. This is also the case in the area of nutrition and physical activity.

Research shows that citizens with lower incomes suffer from higher levels of obesity. Lack of physical activity is also associated with lower socio-economic status. To fight this situation, we have to remember that habits set in early childhood are paramount for obesity's onset.

In fact, children who are overweight or obese are highly likely to remain so into adulthood. Children are often not in a position to evaluate all options or to effectively protect themselves and are also more vulnerable to peer pressure and aggressive advertising and marketing tactics. Obese children are more likely to suffer from bullying, self-confidence issues, depression and underachievement in school. On average, one in three children in the EU are overweight or obese and only 1 in 5 take part in regular moderate-to-vigorous exercise.

The European Commission has been addressing these issues in the framework of the *2007 Strategy for Europe on Nutrition, Overweight and Obesity-related Health Issues* and of the *2014 Action Plan on Childhood Obesity*. Both documents promote healthy lifestyles in general and focus in particular on children and healthy inequalities. They both encourage action involving the Member States and civil society. These priorities were confirmed in the *2014 Council Conclusions on Nutrition and Physical Activity.*

Support for action under this theme has also been happening through the EU Health Programme. The Programme has co-financed, among others, "EPODE for the Promotion of Health Equity". This project that now reaches its end was aimed precisely at analysing the added value of the implementation of community-based approaches based on the EPODE methodology for the reduction of socio-economic inequalities in health-related diet and physical activity behaviours of families living in 7 different European communities.

I believe that the results of EPODE for the Promotion of Health Equity will provide important input to the discussions on how to address health inequalities and reduce childhood obesity. This is crucial if we wish to avoid personal suffering, control national health care costs and prevent negative impacts on the working force and on the economy.

I congratulate all those involved in the EPODE for the Promotion of Health Equity project and I hope that this book and its guidelines can serve as an inspiration.

John F. Ryan

Preface

Jean-Michel Borys

Health inequalities are defined as "differences in health status between individuals or groups, as measured by for example life expectancy, mortality or disease" (1)."

An increasing social gradient in health is found in all European countries (2, 3), making differences in life expectancy at birth possibly reach 10 years for men and 7 years for women between the lowest and highest socioeconomic groups. It is considered that inequalities in mortality from cardiovascular diseases account for about half the excess mortality in lower socioeconomic groups (4).

As indicated by the WHO in the European Charter on counteracting obesity (2007), "overweight and obesity most affect people in lower socioeconomic groups, and this in turn contributes to a widening of health and other inequalities."

The European Commission Communication "Solidarity in health: Reducing health inequalities in the EU" emphasises the variations in health-related behaviours such as quality of nutrition and level physical activity and in obesity prevalence according to socioeconomic factors within and across countries.

In fact, surveys conducted in some EU member states suggests that over 20% of the obesity found amongst men in Europe, and over 40% of the obesity found in women, would be attributable to inequalities in SES. Evidence also shows that childhood overweight and obesity in Europe is also associated with the socio-economic status of parents, especially mothers. Moreover comparing across countries, it also appears that childhood overweight is linked to a Member State's degree of income inequality or relative poverty (5). OECD (6) confirmed that poorly educated women are 2 to 3 times more likely to be overweight than those with high levels of education, while almost no

disparities are found for men. The lower socioeconomic groups are more likely to show a greater risk of positive energy balance, lower density of micronutrients in their diet, lower consumption of fruits and vegetables and lower levels of physical activity.

This has to be considered in a broader perspective where important factors such as gender, income, education, ethnicity, social support, and the living environment can play a role in this social gradient. This leads to conclude on the importance of integrated and targeted prevention measures at an early age with a clear focus on lower socioeconomic groups, in addition to prevention campaigns addressed to the general population.

It appears that interventions that only target vulnerable populations tend to present difficulties in tailoring actions according to social diversity, show less participation rates and often short durations (7). Actually, mass public health communication campaigns are sometimes criticized as potentially reinforcing health inequalities. It has been demonstrated in some cases that disadvantaged groups of population (less educated and less integrated) are more anxious and suspicious in front of health prevention messages (8). Even if they perceive the messages as reliable, this may not be sufficient in fostering the desire to change or to adopt healthier habits.

An example of community-based intervention having demonstrated a reduction in health inequalities is the EPODE Pilot Study (FLVS), a long-term intervention pilot program conducted between 1992 and 2004 in 2 North of France communities, and from which the EPODE methodology originates. The results showed a significant decrease in the obesity prevalence during the first 8 years, a clear trend to decrease was observed in both towns including a decrease by more than 50% of health inequities related to nutrition and physical activity behaviours in the case population compared to a control population (9).

In 2008, EPODE received the support of the European Directorate-General for Health and Consumers (DG SANCO) for the implementation of the EPODE European Network project (EEN, Grant Agreement. 2007327, www.epode-european-network.com, 2008-2011). The EEN project aimed at facilitating the implementation of community-based interventions using the EPODE methodology (10).

Based on these results and EPODE's experiences, the EPHE project (EPODE for the Promotion of Health Equity) aims to analyse from 2012 to 2015 the added value of the implementation of an adapted EPODE methodology in the reduction of socioeconomic inequalities in health-related diet and physical activity behaviours of families with children aged 6 to 12, living in 7 different European communities.

This book aims to present EPHE's overall outcomes and to develop guidelines to be disseminated amongst EU member states. We give great emphasis to the work of the local teams and the original pragmatic organization, which has led to rapid implementation and an achievement of the objectives in a short amount of time.

We thank all the authors and contributors for this outstanding work, which will bring an added value to reducing health inequities according to the initial objective.

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Part 1

Preventing Obesity, The Challenge of Health Equity

Chapter 1

Promoting health and striving to reduce health inequities

Silvia Bel-Serrat, Alba M. Santaliestra-Pasías, Luis A. Moreno

1. Introduction

Health inequalities are a major worldwide concern, and this is especially relevant when considering the pediatric age group. Some research has suggested that socioeconomic differences in health emerge in early childhood and then diminish in early adolescence, only to re-emerge in adulthood (1). However, most of the evidence shows social class gradients in health at every stage of the life course. In adolescents, it has also been recently observed that socioeconomic inequality has increased in many domains. These trends coincide with unequal distribution of income between rich and poor people (2).

Childhood and adolescent obesity is one of the most important current public health concerns worldwide. Substantial socioeconomic inequalities in childhood and adolescent obesity are well documented. Associations between socioeconomic status and adiposity in children are predominately inverse (3). In the US, the prevalence of obesity amongst high-socioeconomic status adolescents has decreased in recent years, whereas the prevalence of obesity amongst their low-socioeconomic status peers has continued to increase (4). In a longitudinal study, it was observed that gains in income during early childhood promoted healthy weight outcomes amongst girls (5).

A strong socioeconomic gradient also exists for the majority of the early-life predictors of obesity, like pre-natal risk factors (pre-pregnancy maternal body mass index (BMI), diabetes and pre-pregnancy diet), ante-/peri-natal risk factors (smoking during pregnancy and low birth weight) and early-life nutrition (including breastfeeding initiation and duration, early introduction of solids, maternal and infant diet quality, and some aspects of the home food environment), and television viewing in young children (6).

The relationship between the environment and obesity is extremely complex. These can range from local factors to global determinants (7). Effective multilevel interventions should be developed to address the obesity epidemic. During the past 20-30 years, multiple controlled intervention studies have been conducted, particularly amongst children and adolescents. Comprehensive obesity-prevention programmes that target multiple energy balance-related behaviours have been shown to promote positive dietary and physical activity (PA) behaviours, although single-strategy interventions generally report limited success.

Given the difficulties to manage obesity once established, this strengthens the need for effective primary prevention strategies in children and adolescents. At least moderately strong evidence supports the effectiveness of school-based interventions for preventing childhood obesity (8).

Several systematic reviews have focused on energy-balanced related behaviours in young population groups with the aim of obesity prevention from all socioeconomic status (SES) (9, 10). For instance, Bleish et al. found in community-based childhood obesity prevention studies that a combined strategy of diet and physical activity intervention(s), including a school component, is more effective for preventing obesity or overweight (9). A recent meta-analysis showed that school-based interventions for childhood obesity prevention, combining diet and physical activity, were mildly effective in reducing BMI in children (10). Taking into consideration the socioeconomic position, Beauchamp et al. (11) recently published a systematic review on public health interventions conducted in all age-groups, i.e. young and adult populations, including also overweight/obese people. The review mainly focused on primary prevention of weight gain and concluded that those targeting the modification of individual behaviours may be less successful in lower SES individuals.

The aim of the present study is to analyze the current information about intervention studies based on energy balance-related behaviours to prevent obesity in low socioeconomic children and adolescents.

2. Social gradient and health inequities. Findings from intervention studies

Health inequities are persistent and widespread across the European region (12). They arise from inequities in the distribution of power, money and resources, and occur both

between and within countries (12). Indeed, the European region includes countries which are close to the best health and narrowest health inequities in the world given the long and sustained period of improvement which includes developed and welfare states and high-quality education and health services (12). This social, economic and health development, however, has not been fully shared by every country, and, in spite of the improvements, differences still remain and, unavoidably, health is affected (12). Therefore, health inequities are not decreasing, but even increasing in many countries, coupled with the economic crisis since 2008, which has exacerbated this trend (12). There is a *social gradient* in health where the higher the socioeconomic position/conditions of people and communities the better their health. Indeed, people in the most disadvantaged social groups and communities, who are subject to many different types of exclusionary processes, experience much worse health than those in more advantaged circumstances, implying a gradient that increases, non-linearly, with level of deprivation (12). Focusing on younger population, relative poverty in childhood strongly influences health and other outcomes throughout life and remains high in much of the European region (12).

Low- and middle-income countries tend to have higher non-communicable diseases (NCD) risk factors than high-income countries. Within the same country, similarly, NCDs and their most important risk factors are higher in people and communities with a lower socioeconomic status within the same country (13). Likewise, rates of obesity are higher in those communities with relatively low socio-economic status; for that reason, tackling inequities in overweight and obesity, and their related determinants such as diet, physical activity and sedentary behaviours, amongst others, has been a priority for European researchers and policy-makers over the last few years (14). Effective intervention programmes should be developed for primary prevention of obesity, especially focusing on children, aiming to reduce health inequities. However, only few intervention studies have been conducted in this sense and, therefore, there is scarce evidence about the effectiveness of interventions in reducing health inequities in obesity. Therefore, a systematic review was conducted to identify intervention studies reporting data on energy balance-related behaviours to prevent obesity in children and adolescents. Only studies fulfilling pre-defined specific inclusion criteria were collected and evaluated for relevance according to the aim of the systematic review. Below provides a review summary of the main findings observed by intervention studies conducted with children and adolescents from different socioeconomic status to prevent obesity outcomes. Studies are grouped based on the main component(s) addressed in the intervention.

2.1. Dietary interventions

A one-year follow up intervention study was conducted with German children (mean age 8.3±0.7 y) (15, 16) that comprised diet structured lessons and aimed to improve beverage consumption by increasing water intake via a combination of environmental and educational measures. Water fountains were also installed in the

intervention schools. The risk of overweight was reduced by 31% in the intervention group, but changes in BMI z-scores (z-BMI) did not differ between them (15). The intervention effect on the remission of overweight was significantly modified by the differences in diverse immigration backgrounds (p=0.02). During the follow-up period, overweight incidence was reduced significantly in the intervention group among the non-immigrants, but not among the immigrant background (16).

2.2. Physical activity interventions

An intervention study was carried out in Australian adolescents from disadvantaged neighbourhoods (mean age 14.3±0.6 y). The outcomes measured included BMI, percent of body fat and waist circumference. The intervention integrated a multi-component school-based intervention and included sport sessions, interactive seminars, lunch-time activities, leadership sessions and pedometers monitoring of PA. The intervention group showed a beneficial reduction effect in BMI and z-BMI compared with the control group.

2.3. Dietary and physical activity interventions

Most of the studies (17-23) that aimed to improve obesity-related outcomes combined diet and PA interventions. These studies involved various types, intensities and durations of the interventions. Assessed outcomes varied across studies: weight, z-weight, BMI, z-BMI, BMI percentiles, body fat percentage, and skinfolds thickness. Three of the seven studies showed statistically significant improvements in obesity-related outcomes (19, 20, 22). All the effective studies were targeting children.

As a further example, a two-year intervention focusing on low-income schoolchildren, consisting of modifications of school-provided meals and of increased opportunities for PA during the school day, showed that, a significantly higher proportion of children remained within the normal BMI percentile range in the intervention schools than in the control school (20). Additionally, the intervention schools were significantly more likely to reduce their BMI z-score ($p<0.01$) and their weight z-score ($p<0.05$), in comparison with children in the control schools (19).

Advice about healthy eating habits, scheduled meals and daily physical activity among children and their parents was included in a two-year intervention aimed to promote healthy lifestyle among Swedish children (mean age = 10.6±0.4 y). The results showed significantly higher BMI in the control group (adjusted mean = 28.94 kg/m^2) compared to the intervention group (adjusted mean = 28.09 kg/m^2) (22). Z-BMI at follow-up was also significantly higher in the control group compared with the intervention group.

Four studies did not find significant differences in terms of obesity-related outcomes after the intervention. (17, 18, 21, 23).

2.4. Physical activity and sedentary behaviour interventions

A tailored after-school dance and screen time intervention was implemented for one year in low-income African American children (age range: 8-10 y) (24). Assessed outcomes included BMI, waist circumference and triceps skinfolds. No changes in body composition indicators were observed between intervention group and control group, but the incidence of being overweight during the follow up period was reduced significantly in the intervention group among those from a non-immigrant background.

2.5. Dietary, physical activity and sedentary interventions

A one-year intervention study was performed in American children combining diet, physical activity and sedentary behaviours (25). Two-intervention groups were created. One group included activities to increase moderate-to-vigorous PA, physical exercise (PE) and activity breaks, fruit and vegetable consumption, and to decrease television (TV) viewing and sugar-sweetened beverage consumption. Apart from the activities included in the first intervention group, the second intervention group also included the formation of the "community action" team, which aimed to identify priority areas of action; it also implemented workshops and activities each semester, and assessed outcomes included BMI. The percentage of students classified as overweight or obese decreased by 3.1% in the first group whereas a decrease of 8.2% was observed within the second "intensive" intervention group ($p<0.005$).

2.6. Dietary, physical activity, sedentary and sleep interventions

Few studies aiming to improve obesity related outcomes included interventions that comprised four components i.e. diet, PA, sedentary behaviours and sleeping habits (26-28). Two publications belonged to the same intervention study, which was carried out predominantly in migrant preschool children from Switzerland. The follow-up period comprised of ten and twelve months, respectively. A cultural tailored intervention consisting of a PA programme and lessons on nutrition, media use and sleep was conducted. Fixed and mobile equipment were installed around classrooms. Assessed outcomes included BMI, percent body fat, waist circumference and skinfolds (triceps, biceps, subscapular and suprailiac). Although no group differences in BMI at follow-up were observed, children in the intervention group showed reductions in percentage body fat and sum of the four skinfolds, as well as lower increases in waist circumference compared with control children (26). The intervention was similarly beneficial among preschoolers of migrant parents compared to non-migrant parents. However, children of low education level parents had smaller intervention effect sizes, compared to children of middle/high education level parents, although differences did not reach statistical significance (27). Another study was conducted in the US to examine the effectiveness of a home-based intervention conducted in low-income, racial/ethnic minority families with young children (28). The intervention promoted household routines, family meals, adequate sleep, limiting TV time, and removing the TV from the child's bedroom, using

motivational coaching at home and by phone. After a 6-month intervention, the intervention group decreased their BMI compared with the control group (p=0.05).

Only a few intervention studies exclusively addressed minority groups or compared high versus low SES populations or migrant versus non-migrant populations. Furthermore, the studies' heterogeneity in terms of sample size, participants, design, type of intervention, duration of the intervention, outcomes and follow-up hindered the generalizability of the observed findings and, consequently, the evaluation of the effectiveness of the interventions across studies. Overall, it seems that interventions combining both diet and PA components could be effective to prevent children from becoming overweight in the long run.

Several recommendations can be drawn based on the results derived from the studies. The main barriers and triggers that emerged from the intervention studies carried out in minority groups were extracted in Table 1. These identified major barriers could be overcome by:

- extending intervention periods to out-of-school time, including summer programming, and controlling eating and exercise outside the school;
- enhancing parental and teacher participation, and;

Table 1. Main barriers and triggers identified through studies

Barriers

- Extended periods of out-of-school time (holidays, summer vacations)
  - Inclusion of summer programming
- Heterogeneity in immigrant background
- No control of eating and exercise habits outside the school
- Low intensity of intervention
- Low attendance to sessions combined with lack of parental participation
- Willingness of parents to lobby for a change in lifestyle
- Low levels of compliance in teachers as main intervention partakers
- Low likelihood of implementation in classroom curriculum-related interventions

Triggers

- Support of school-staff and parental (parents and siblings) involvement as key factors
  - Valuable sources for making healthy lifestyle changes.
- Daily contact maintenance with the participant population during the initial intensive phase
- Viewing of interventionists (i.e. teachers or University students) as role models by the participants
  - Increased excitement to participate in activities with them
  - Participants received consistent positive feedback for modifying their behaviours
- Family and parents involvement to support the changes within the home environment
- Consistent follow-up of school activities by study facilitators
- High level of school head support
- Change in the school environment: Importance of long-term commitment of school resources and innovations for influencing child physiological changes
  - Built environment & Curricular framework
- Importance of a long-term commitment of the community for influencing child physiological changes
- Community facilitated the post-intervention sustainability of many polices, system changes and programme elements
- Integration of community involvement through school

- controlling the intervention intensity and children's attendance, which should be carefully monitored to guarantee the success of the intervention.

On the other hand, the most important identified triggers are the following:

- school-staff and parental involvement as the key factors to motivate healthy lifestyle changes;
- changes in the school environment accompanied with the support from the school head to ensure the sustainability of the intervention and to promote child behavioural changes;
- community involvement to facilitate post-intervention sustainability;
- daily contact maintenance and participation of teachers or University students as role models to increase the interventions' effectiveness.

2.7. Levers and challenges to reduce health inequities

Reducing health inequities particularly those related with overweight, obesity and associated determinants are a priority for European research. The WHO, indeed, recommends considering reduction of health inequities as the main criteria to assess health system performance (12). The EPODE for the Promotion of Health Equity (EPHE) evaluation project aims to reduce inequalities related to childhood obesity prevention among high and low SES groups, with a special focus on the child and the family environment (14). The EPHE intervention focuses on four determinants: promotion of fruit and vegetables intake, water intake, active lifestyle and adequate sleep duration. Additionally, segmentation approaches are important to determine the intervention's effectiveness in community-based obesity prevention programmes (29).

According to Brown & Summerbell (30), the number of interventions aiming to prevent obesity during childhood, and even adolescence, has been increasing over the last few decades. This tendency is also observed when referring to studies focused on low-income population groups as all the studies reported here were conducted between 2003 and 2012; nine of the twenty-one studies identified were carried out in 2010. Interventions are mainly conducted through/in schools, i.e. kindergartens, primary schools and secondary schools, maybe because the school setting increases its ability to be implemented.

The most common approach when designing obesity prevention interventions is a combination of diet and PA, as it allows researchers to cover two major lifestyle factors influencing obesity development. In spite of that, it seems that the combination or not of several energy balance-related behaviours, i.e. diet, PA, sedentary behaviours and sleep, within the same intervention does not determine its effectiveness. Based on our findings, both the intervention that exclusively focused on PA and the intervention combining diet, PA and sedentary behaviours were effective and significantly reduced obesity outcomes (21, 25). On the other hand, focusing on a single behaviour does not ensure the success of the intervention. Only one out of two studies using a dietary intervention approach was effective in decreasing the incidence of overweight at

follow-up in children, although no changes were found in body composition indicators (15). PA interventions, however, were effective in decreasing the obesity outcomes in both children and adolescents. Combining PA and sedentary interventions does not seem to be effective given the lack of effectiveness in the specific study (24).

In agreement with Brown & Summerbell (30), the effectiveness of the interventions to prevent obesity with a combined diet and PA approach is equivocal, and this is also the case in interventions focusing on low SES. A consistent pattern between the effectiveness of the intervention and the size and duration of the study was not observed either. In fact, those studies with the longest duration of intervention, i.e. three years, were not effective in reducing obesity outcomes (17). Nine out of 15 studies were successful in reducing body fat (26) or BMI (16, 19, 22, 25, 28, 31, 32), or maintaining BMI (20) in low-income children and adolescents, whereas no significant improvements were seen in terms of obesity outcomes in the other six.

Outcome measurements differed among the studies, but the most common was BMI. Most of the studies included BMI, BMI percentile or z-BMI as their main outcome, followed by percent of body fat, which were measured in six out of eighteen studies. The majority of the studies used simple measurements to assess body composition, in order to ease and simplify the evaluation and the follow-up period. The use of different body composition indicators across studies makes the comparison of obtained results difficult. Moreover, isolating a single parameter (BMI or z-BMI change) and neglecting other important outcomes may undermine the evaluation of childhood obesity intervention effectiveness (33). According to most researchers (34), a reduction in BMI z-score of at least 0.25 is considered clinically significant for pediatric weight loss. Although none of the studies that used z-BMI as outcome observed a reduction of at least 0.25 units (22, 28, 31), there were significant differences between control and intervention groups when analysing the effect on the prevalence of overweight (16, 25, 32). These results increase the possibility to reduce the minimum changes in z-BMI to consider them as clinically meaningful, as limited changes in body composition do not exclude relevant changes in other cardiovascular risk factors such as insulin resistance or blood pressure (35, 36).

The ability of the intervention to reach low-income children and adolescents is as crucial as it is likely to determine its success. Programme adaptation, according to the population of interest, through previously conducted pilot studies and focus groups, to address racial/ethnic population-associated disparities, seems to be one factor that positively influences the effectiveness of the intervention within low-income population groups (37, 38). Offering activities for free and incentives during the interventions, could also improve the intervention's adherence, given that low-income population groups often cannot afford these types of activities. Furthermore, children from low SES families had higher likelihood of being qualified for free and/or reduced prices at school canteens, which increased the proportion of children taking advantage of such school services and, consequently, the rate of exposure to interventions developed at the school canteens. Likewise, support from school-staff, long-term commitment of schools, community resources and innovation are

essential to contribute to the child's physiological changes. In fact, implementing interventions through the school settings with teachers acting as interventionists could enhance the adherence to the intervention. This may be explained by the fact that teachers may be seen as role models, which would result in increased eagerness to participate in activities. This provides children with consistent positive feedback to modify their behaviours. For those reasons, schools may be effective environments to implement strategies to prevent obesity (19). In contrast, low levels of teachers' compliance together with low likelihood of implementation of classroom curriculum-based interventions, can negatively affect the effectiveness of interventions. For that reason, it is recommended to support and encourage teachers, in order to guarantee the success of the programme. Additionally, family involvement is a key factor for making healthy lifestyle changes and maintaining these changes within the home environment. Indeed, the lack of parental participation together with a poor willingness of parents to lobby for a change in lifestyle were considered as crucial factors in determining the success of the intervention.

On the other hand, some studies observed that extended periods of out-of-school time, i.e. holidays and summer vacations, decreased the effect of treatment over time. As proposed by Hollar et al. (19, 20), this could be ameliorated by the inclusion of additional programming during such periods. Additionally, the lack of control of habits within the home environment may be another key factor influencing the absence of significant results in the improvement of obesity outcomes. The degree of heterogeneity in migrant background could also be decisive, as it may hinder the development of tailored intervention programmes to each specific population. Therefore, the evaluation of different migrant and SES groups is a key-factor to further develop strategies for obesity prevention.

Overall, measures need to be taken to reduce inequities in the social and physical environment, e.g. access to healthy foods, walking and cycle paths, job opportunities and education, in order to reduce behavioural risk factors and other health determinants (39). It is also crucial to design policies that act across the whole gradient, address the needs of people from low SES backgrounds (12). Policy analysis and recommendations should be specific to low, middle and high-income countries and communities to reduce the existing gap and to make progress, including those with low-incomes (12).

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Chapter 2

EPODE: a methodology involving everyone

Jean-Michel Borys, Sarah Lackert, Pierre Richard, Julie Mayer, Pauline Harper, Hugues Ruault du Plessis

1. Obesity and low income facts

The prevalence of overweight and obesity has increased worldwide during the last 30 years (1–6). Following WHO global estimates in 2014, more than 1.9 billion adults, 18 years and older, were overweight. Of these, over 600 million were obese. Overall, about 13% of the world's adult population (11% of men and 15% of women) were obese in 2014. The worldwide prevalence of obesity more than doubled between 1980 and 2014.

In 2013, 42 million children under the age of 5 were overweight or obese. Globally, an estimated 170 million children (aged less than 18 years) are now estimated to be overweight (7). Once considered a high-income country problem, overweight and obesity are now on the rise in low- and middle-income countries, particularly in urban settings. In developing countries with emerging economies (classified by the World Bank as lower- and middle-income countries) the rate of increase of childhood overweight and obesity has been more than 30% higher than that of developed countries (8).

Overweight and obesity are linked to more deaths worldwide than underweight. Most of the world's population lives in countries where overweight and obesity kill more people than underweight (this includes all high-income and most middle-income countries).

Numerous studies show that low-income and obesity are linked together. In particular, in industrialized countries it is children in lower socioeconomic groups who are at greatest risk (9). For example, a 2006 study by the Colorado Health Foundation titled *Income, Education and Obesity* (10) found that 25% of Colorado children living in low-income households with an average income of $25,000 or less were obese compared to 8% of the children in households with an income of $75,000 or more who were obese. These results can be found in many developed countries (9).

2. Childhood obesity is preventable

Overweight and obesity, as well as their related non-communicable diseases, are largely preventable. Supportive environments and communities are fundamental in shaping people's choices, making the healthier choice of foods and regular physical activity the easiest choice (accessible, available and affordable), and therefore preventing obesity (11).

In order to prevent obesity, its multiple determining factors must be understood with the subtle balancing of genetic make-up, individual behaviours and the impact of the environment (12, 13). On an individual level, weight gain is based on contributing factors such as the absence of breast-feeding, premature weaning, an abundant supply and availability of food, a reduction in physical activity, an excess of proteins in childhood, mediocre sleep quality, pollution, social stress, **socio-economic status**, culture, parenting styles, etc.

Although there are signs of stabilization in children in some age groups in certain countries (14, 15), large-scale, effective prevention of overweight and obesity remains a pressing public health priority given the adverse impact on health and quality of life in childhood (16–19) and the increased risk of obesity and associated health complications in adulthood. Nearly two-thirds of children with obesity will continue to suffer from the condition throughout their adult life (1).

Overweight and obesity in childhood are known to have significant impact on both physical and psychological health. For example, overweight and obesity are associated with dyslipidemia, hypertension, abnormal glucose tolerance and infertility. In addition, psychological disorders such as depression occur with increased frequency in obese children (21). Overweight children followed up for 40 (22) and 55 years (23) were more likely to have cardiovascular and digestive diseases, and die from any cause as compared with those who were lean.

Children are often considered the priority population for intervention strategies because weight loss in adulthood is difficult and there are a greater number of potential interventions for children than for adults. Schools are a natural setting for influencing the food and physical activity environments of children. Therefore, it would be more sensible to initiate prevention and treatment of obesity during childhood. Prevention may be achieved through a variety of interventions targeting built environment, physical activity and diet (24).

Over the past 10 years, several studies have provided evidence that the prevention of obesity in children is possible through interventions aimed at modifying eating habits and increasing physical activity (25–27).

To better inform and develop a comprehensive response to childhood obesity in particular, WHO's Director-General established the high-level Commission on Ending Childhood Obesity (ECHO). The Commission will review, build upon and address gaps in existing mandates and strategies, raise awareness and build momentum for action to address childhood obesity (28).

3. EPODE: an impact on childhood obesity prevention and health inequities reduction

EPODE (Ensemble, Prévenons l'Obésité Des Enfants, i.e « Together, let's prevent childhood obesity ») programme started in 1992 with a long-term and whole population approach nutrition education programme. It started in two pilot towns in the North of France (Fleurbaix and Laventie – together about 6,666 inhabitants in 1991) and consisted in community-based interventions over the next 12 years (26). A comparison population was selected from two other towns (CT) of similar demographic and socioeconomic characteristics also situated in Northern France. Results indicate that this community-based intervention programme, in fact, did reduce childhood overweight, with a substantial decrease in the prevalence (1992: 11.4% in FLVS and 12.6% in CT p = 0.6; 2004: 8.8% in FLVS and 17.8% in CT p < 0.0001) (Figure 1). It also appeared that the involvement of the whole community was necessary to reduce the prevalence of childhood obesity (26).

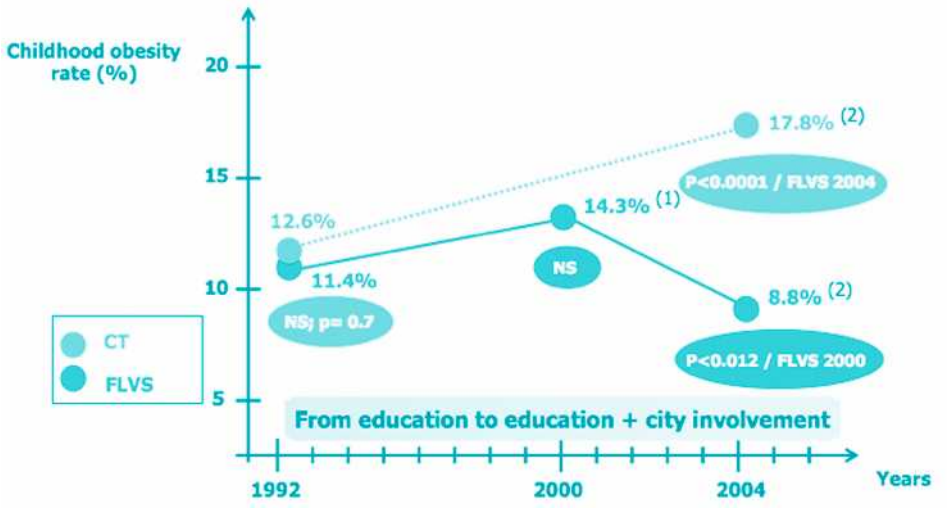

Figure 1: Evolution of children obesity prevalence in EPODE's towns (FLVS) and in comparison towns (CT) between 1992 and 2004.

Finally, this prevention programme proved to be efficient across all socio-economic levels (Figure 2). By taking a series of coordinated societal measures, it was possible to slow down obesity and to improve children's lifestyle and decrease health inequalities (Figure 3).

Figure 2: Obesity and overweight prevalence (%) according to socioeconomic groups in 2004 in EPODE's towns (FLVS) compared to comparison towns (CT). *p-value<0,01.

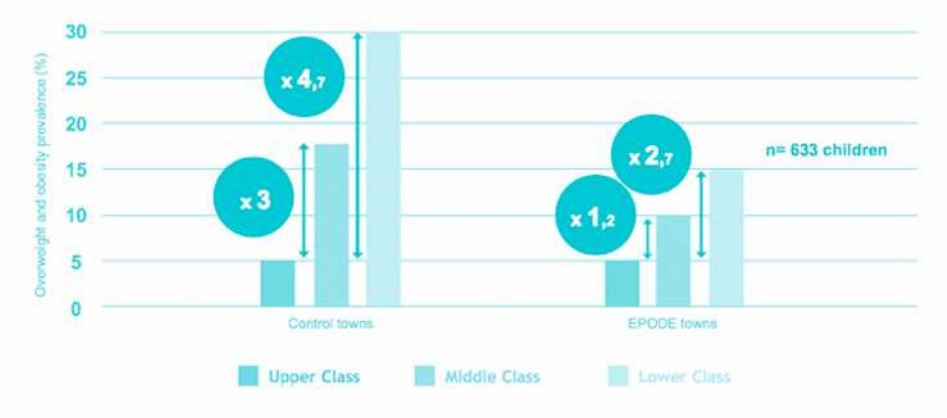

Figure 3: A reduction up to 50% of the health inequities amongst overweight and obesity prevalence (EPODE pilot).

Based on lessons learned from this pilot study, EPODE methodology has been built and implemented in several French pilot towns. In these towns, success to date is measured by a large field mobilization and the encouraging improvements in the body mass index (BMI) of children.

While data available in France at national level shows an overall stabilization in the prevalence of childhood overweight and obesity, results from the French EPODE pilot towns show a significant decrease in overweight and obesity: 9.12% between the years 2005 and 2009, i.e. a reduction from 20.6% in 2005 to 18.8% in 2009

(p < 0.0001) (29). Prevalence in overweight decreased from 15.8% in 2005 to 14.4% in 2009 (p < 0.0001) and prevalence in obesity decreased from 4.8% in 2005 to 4.4% in 2009 (p = 0,056) (29).

The same trend was shown in VIASANO, the Belgian EPODE programme with a reduction of the prevalence of overweight and obesity in two French pilot towns compared to the Belgian French community. After 3 years, a decrease of 22% of the prevalence of overweight in Marche and Mouscron have been observed. These encouraging results confirm the transferability of EPODE methodology (30, 31).

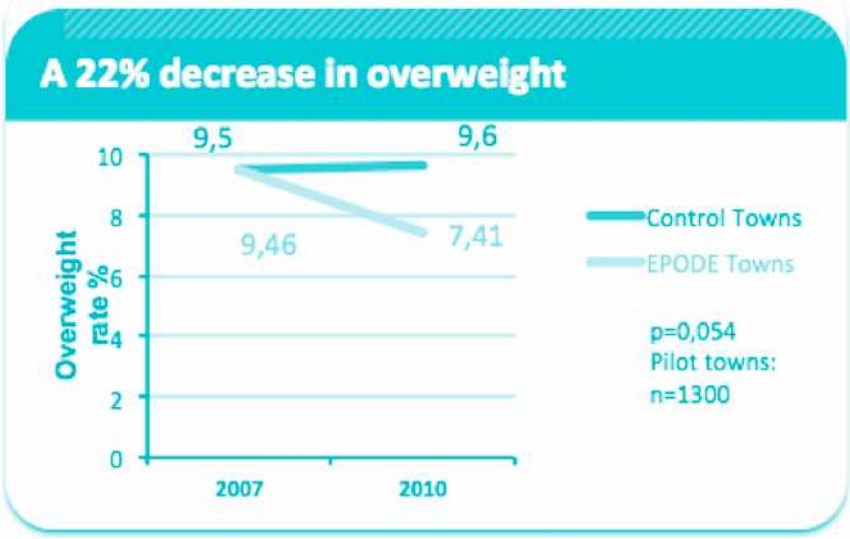

Figure 4: VIASANO results.

Similar results are expected from JOGG programme in the Netherlands, ENERGIZE in New Zealand, OPAL in South Australia, THAO in Spain, Montemorelos Programme in Mexico and others.

4. EPODE International Network

EPODE methodology has proven to be able to ensure the sustainability of the programmes. EPODE programme is now implemented at a large scale, with encouraging results.

In light of the encouraging experiences and results and at the expressed request of the international scientific community, EPODE International Network, a nonprofit organisation, was created in 2011 in Brussels (32).

It is a contribution to the response to the need and demand from the global community in the fight against childhood obesity and non-communicable diseases (NCDs), through sustainable and large-sale community-based programmes (CBPs).

- from organisations and community-based programmes: to share best practices and benefit from EPODE methodology and experience;
- from the global scientific community: a global structure to put science into practice;
- from the policy community: the risk-free legitimacy of EPODE to develop strategies for obesity prevention;
- from the private sector: to generate more interest, do more advocacy and dissemination, facilitate implementation of community-based programmes aimed at preventing childhood obesity and NCDs in more countries around the globe;
- from all players: to share experiences and knowledge and to be part of a global approach together with local action.

EPODE International Network's overall objective is to build international capacity and capability for multi-partner community-based programmes (CBPs) in countries by:

- facilitating best practice sharing between EIN member programmes;
- providing EIN members visibility at global level;
- gathering leading political representatives to place and maintain obesity prevention at the top of agendas;
- gathering the leading global experts to build greater scientific and field evidence;
- forging links for greater dialogue between all stakeholders from public, civic and private sectors (civil society, corporate sector, institutions).

5. The community-based approaches

5.1. Changing the local environment to change behaviour

This approach is focused on the modification of habits. It has now been convincingly demonstrated that we live in an "obesogenic" environment, and the non-western populations are rapidly creating similar environments. An obesogenic environment typically elicits the consumption of too much energy and discourages physical activity. The environment therefore needs to be changed. It is often seen in traditional prevention efforts that after initial changes, there is a rapid return to earlier behavioural patterns (33-35). In addition, when populations migrate to a new environment, their habits change in a predictable way to adapt to the new situational characteristics (36). Therefore, we have to change the environment to make healthy behaviours the most natural, easy and rewarding response and this includes: physical environment (e.g. the attractiveness of park areas), cost and benefit of behaviour (e.g. the price of food), social norms associated with being physically active, etc. To achieve most of these changes, it is necessary to collaborate with institutions or actors that have control over these environmental factors (37).

Over the past decade, several studies have demonstrated that the obesity prevention in children is possible through community-based interventions, to improve eating and

physical activity habits (25, 27, 32, 38-40). Increasing evidence shows that the most successful interventions are multicomponent, adapted to the local context (cultural and environmental), using the existing local structures and networks of a community, building partnerships and involving the participants in the planning, implementation and evaluation stages. (41, 42).

5.2. The multistakeholder approach

The multifactorial strategy can use different social marketing techniques (43, 44). In any event, it is necessary for the techniques to be seamless and in the correct context, taking into account culture and socio-economic status.

Communication and evaluation are two other basic pillars of these initiatives. The strategy is based on evidence but also on experience. Activities are joined-up, renewable and exportable, and contribute to reducing health inequalities. Activities take place in developed and non-developed areas (town-planning, traffic systems, food provision) and go hand in hand with information and case studies. It concerns both general and targeted activities. Activities are multifactorial and permanent.

An important element of CBPs is the participation of the individual. By participating in the programme, the programme is more likely to succeed and ensure sustainability within a given context and within resources (45). Through participation, people are enabled to choose healthier alternatives. They are given the means and opportunities to do this and are made active partners in the process of change and its outcomes (46); and it is also important in the development of a sense of ownership of the programme (47). The rationale for CBPs is the notion that individuals cannot be considered separately from their social environment and context. Therefore, CBPs incorporate multiple interventions extending beyond the individual level; in doing so, they seem to have more success in changing behaviours than those which do not (48, 49). Other important elements of CBPs are empowerment, social network approach, capacity building, multi-sectoral collaboration and a mix of interventions (49, 50).Empowerment is the ability of people to gain understanding and control over personal, social, economic and political forces in order to take action to improve their life situations (51).

A social network offers social support (emotional, instrumental and informational), it influences through social norms, and presents role models and social comparison principles (46). The diffusion of ideas, knowledge and new norms throughout these networks is considered to be important to achieve community change (46) as well as using ambassadors that can spread the message and motivate people to participate in the community life and the "healthy activities" proposed by the health promotion programme. Another key to success is involving parents and their children together and enhancing peer-to-peer dynamic.

These programmes include the participation of a multitude of stakeholders and bring a common language shared by all (50, 52). In particular, it promotes their involvement

at central level (ministries, health groups, NGOs, and private partners) and local level (political leaders, health professionals, families, teachers, local NGOs, and the local business community) (39).

CBPs require policymakers and legislators to influence the law, the use of methodological frameworks, the participation of decision-makers and politicians. The involvement of local stakeholders must take place at the policy stage and programmes must integrate existing stakeholders at a local and national level. Local government has a leading role: town council can assume leadership in the realization of health promotion projects or interventions in different ways and be able to allocate specific budget for activities and an evaluation plan (39, 50).

The process involves participation of key stakeholder groups such as community leaders, from the implementation of a pre-designed intervention in a local setting to deep community participation in designing and implementing the intervention. By listening and learning from these populations, it is ensured that the interventions address their needs.

Since CBPs must be adapted to local context, it is not possible to provide an exhaustive list of the « mandatory » CBP components (53).

Multi-stakeholder approaches are widely recognised to be necessary in order to tackle obesity epidemics on a large scale (54, 55). No party can tackle the problem alone, joint efforts and cooperation are necessary to meet the challenge. It is important to build common ground where market forces can be mobilised in an appropriate manner to contribute to the achievement of a public health objective. Public-private collaborations are also considered to be more likely to increase the scope of financial and human resources that could be mobilised to serve public health programmes' objectives in an appropriate manner.

5.3. Evaluation of CBP

Several practical guides and frameworks have been developed to assist the planning of the evaluation of community-based health promotion programmes. Examples of such guides are CDC's Framework for Programme Evaluation in Public Health (56), the WHO Framework for Health Promotion Evaluation (57) and the EPIC model (58). EPIC stands for Evaluation Planning Incorporating Context and provides a more contextual approach of the CDC framework (59). These models or frameworks share common ideas of how to tailor an evaluation to a community-based health promotion programme. Shared ideas in the construction of an evaluation plan are:

- engagement of stakeholders in the construction of the evaluation plan, evaluation needs and data collection;
- programme description following a logic model and programme goals and objectives;
- evaluation questions, design, methods and instruments;

- stakeholder involvement in analysis;
- the dissemination of results.

The evaluation is more likely to be successful if there are clearly defined feasible programme goals and objectives (59-61). A programme goal is usually defined as the future outcome of the programme; it is a long-term goal and includes those affected by the CBP (53, 61). To achieve this programme goal, smaller steps are needed; these are called programme objectives. These are measurable actions and should include who is involved, what the desired outcome is, how progress will be measured and the timeframe for achievement (53).

For the evaluation of the process, common indicators are the programme inputs, the implementation activities and stakeholder response to the programme (61). The implementation activities include performance of staff, methods of data collection, activities related to the organisation of the programme (e.g. meetings, contact moments) and media distribution. Stakeholder opinion includes reviews of programme plans, participation level and the response of collaborating partners to the programme (61).

The effect evaluation is an instrument for accountability for local government (administration) and the local stakeholders. It examines the impact and outcomes of the programme and focuses on documentation and evidence (59, 62). It seeks to determine its overall impact and ability to do what it was designed to do (59). For example, the main question of the Dutch Heartbeat programme was whether the programme contributed to the reduction of cardiovascular heart disease; this was supported by evaluations to see change in fat intake, physical activity and smoking (63).

Evidence indicates that key stakeholders participation will even improve the quality, relevance and credibility of evaluation results (64, 65). It will not only increase their sense of ownership in the evaluation process and the results, but will also avoid surprises when the final report is disseminated and helps to foster the process of empowerment and build stakeholders' capacity to address health needs (65).

6. EPODE Methodology

EPODE is a coordinated, capacity-building approach aimed at reducing childhood obesity through a societal process in which local environments, childhood settings and family norms are directed and encouraged to facilitate the adoption of healthy lifestyles in children (i.e. the enjoyment of healthy eating, active play and recreation) (27).

The primary EPODE target groups are children from 0 to 12 years old and their families. Because they can initiate micro-changes within the ecological niche of children

and their families through concrete initiatives fostering better eating habits and physical activity in everyday life, the local stakeholders are the other target of the programme.

The EPODE philosophy is based on (66):

- a positive approach with no stigmatisation of any culture or individual;
- a concrete and step-by-step learning and experience of healthy lifestyle habits;
- the tailoring of messages and actions to the targeted population (e.g. according to age, socioeconomic status);
- a sustainable implementation of the programme to enable communities to plan actions and environmental changes for the long term.

6.1. Strong political will, thanks to the involvement of political representatives

The EPODE methodology relies on the importance of political awareness, willingness and involvement to set up and implement EPODE initiatives. The political representatives express obesity prevention issues at their level (national, regional or local) and are best positioned to initiate and support cross-sectoral prevention dynamics in communities. The political representatives can also build relationships with scientific experts, public and private partners (at national and local level) as well as with European political representatives to foster the set up and the implementation of EPODE-like CBPs in other European countries

6.2. Coordinated organisation and approach based on social marketing methods

Epode approach promotes the involvement of multiple stakeholders at central level, from ministries, health groups, NGOs to private partners. The programme also benefits from the expertise and guidance of an independent expert committee. To put the EPODE methodology into practice, a central coordination team, using social marketing and organisational techniques, trains and coaches a local project manager appointed in each community by the mayor or other local leader able to champion the programme (Figure 5).

EPODE is a combined and coordinated approach with the application of marketing alongside other concepts and techniques to achieve specific behavioural goals to improve health and reduce health inequalities. Social marketing messages are incorporated into strategies aimed at influencing the social and physical environments surrounding individuals. EPODE uses social marketing strategies into a multi-level and multi-stakeholder approach to ultimately reach families in their local environments (67). This approach aims to mobilise local stakeholders within their daily activity (teachers, local NGOs, catering services...) to promote healthy lifestyles and greater physical activity in everyday life, empowering families and individuals in a sustainable way.

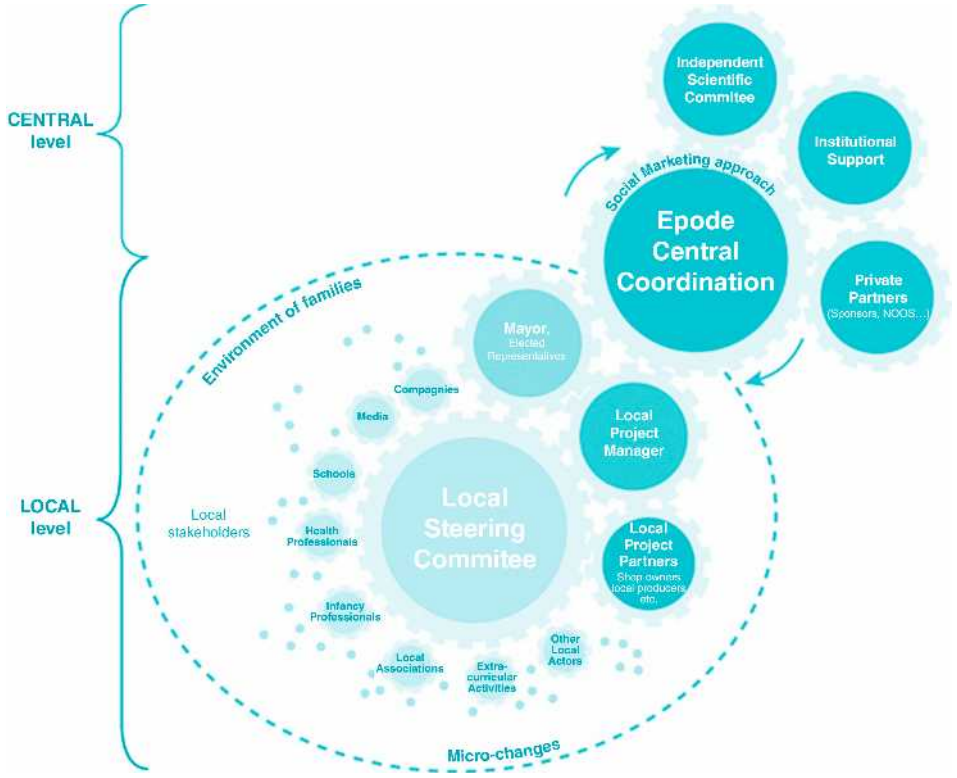

Figure 5: A multi-level, multi-stakeholders approach, involving public and private partners.

6.3. Scientific evaluation and dissemination

The evaluation (68) includes both a monitoring of process and outcomes indicators. The evaluation framework of the EPODE methodology is tailor-made by the central coordination team, with the expertise of a scientific committee and feedback from EPODE local stakeholders (69). Amongst other evaluation criteria, in each EPODE town, the Body Mass Index (BMI) of children from 5 to 12 years old is regularly measured.

6.4. Public-Private Partnerships (PPP)

PPP platform is concerning all scales of programme implementation. All partners are involved in different actions that make sense in the global context of EPODE programme from the local level to the global level (27, 66).

PPP take place within a context of governments being publicly accountable for protecting and promoting the nutritional health of populations. Several UN system organizations identify global food and beverage companies as important stake-

holders to help promote a healthful diet and achieve the human right to food security. It has been suggested that transnational food, beverage and restaurant companies, and their corporate foundations, may be potential collaborators to address global issues such as obesity and NCD (70, 71).

Evaluations of the benefits of PPPs suggest they can raise the visibility of nutrition and health on policy agendas; mobilize funds and advocate for research; strengthen health-policy and food-system processes and delivery systems; facilitate technology transfer; establish treatment protocol standards; expand target populations' access to free or reduced-cost medications, vaccines, healthy food and beverage products; and distribute "essential packages" of nutrition assistance during humanitarian crises (71).

7. Conclusion

Obesity is a multifactorial disease that results from complex causes and mechanisms. Thus, using isolated approaches –which are often likely to increase health inequities– cannot efficiently prevent obesity. Multi-stakeholders approaches, such as CBPs have proven their efficiency at a territorial level. EPODE is a gold standard of CBPs whose methodology results from 23 years of experiment. Preventing obesity at a territorial level takes time: implementation of a CBP requires 2 years, and obtaining significant results may require 3 to 4 years.

Nevertheless, the methodology exists and it consists of four pillars (political involvement, coordinated organisation and social marketing-based approach, multi stakeholder approach involving PPP, scientific background, evaluation and dissemination). As obesity and related health inequities are now a worldwide issue, it needs to be tackled at a global level. As EPODE International Network shows, a worldwide movement is underway. Now is the appropriate time to implement community-based programs to reduce both overweight prevalence and health inequities.

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Chapter 3

Social and environmental determinants, household food insecurity

Maria João Gregório, Pedro Graça

1. Food insecurity as a public health problem

Food security is defined as a situation that exists when "all people, at all times, have physical and economic access to sufficient, safe and nutritious food to maintain a healthy and active life" (1). It is a multilevel concept, which includes four main dimensions: availability related to food supply; accessibility in order to ensure the physical and economic access to food; adequacy to meet nutritional needs in quantity and quality while respecting individual food preferences and cultural issues (utilization); and, lastly, stability of the guarantee of food security over time (2). According to the food security definition, it is a broad concept where all these dimensions are largely affected by a considerable number of factors related to: public policies of different sectors, food production/industry/distribution food systems, marketing and advertising of food, social support networks and individual determinants related to food choice behaviour (Figure 1).

Recently, the guarantee of food security became a priority action for public health, in order to reduce the social gap in diet and diet-related non-communicable diseases. Indeed, there is strong evidence to support that food insecurity is negatively associated with diet quality (3) and linked to a large number of health conditions (4), such as hypertension (4), hyperlipidemia (4), diabetes (4, 5), cardiovascular diseases (4) and obesity (6-8). Other studies also suggest a higher risk for poor general health and lower scores on the physical and mental health in food-insecure households (9).

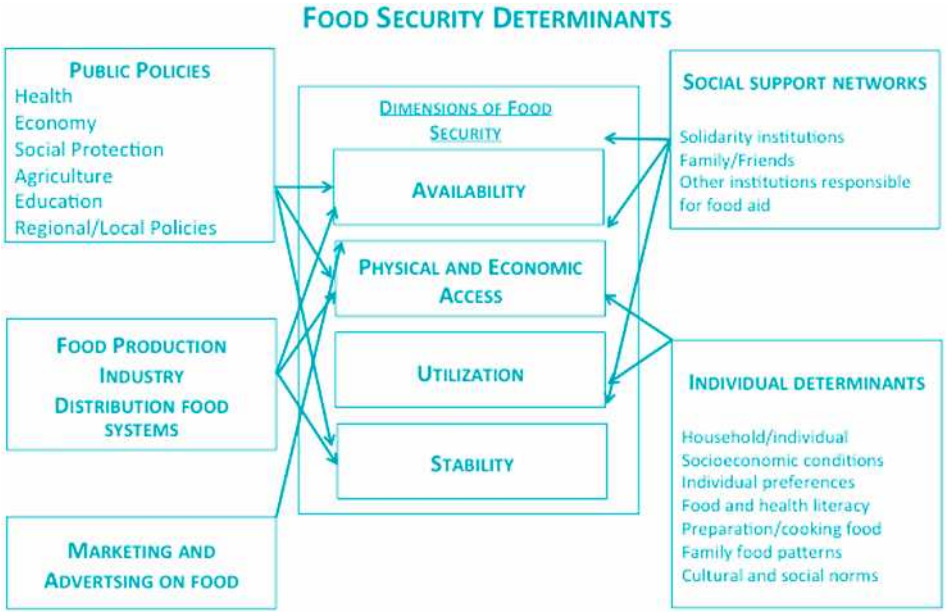

Figure 1: Determinants of food security.

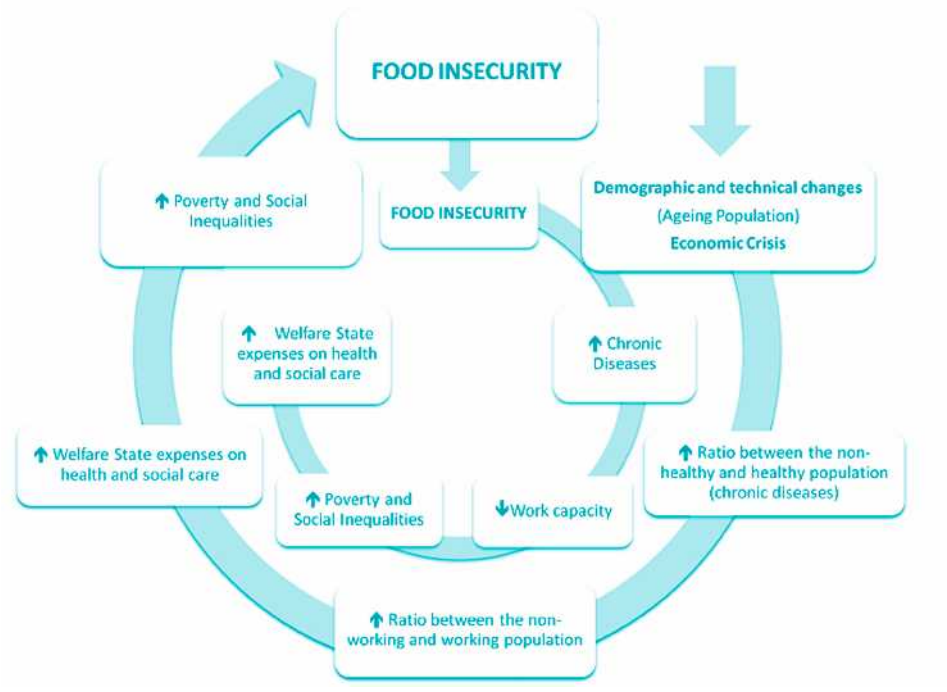

Figure 2: Impact of economic, political, social and demographic context on food insecurity.

Moreover, chronic disease and poverty and/or food insecurity appear to be strongly interconnected. Apart from the evidence suggesting that chronic diseases are more common in the most vulnerable groups of the population, it is also known that poverty and social exclusion can also be represented as a consequences of chronic diseases, because illness and disability have largely accounted for lost of productivity at work, leading to absenteeism and reduced efficiency. Thus, the interconnection between poverty, food insecurity and chronic diseases follows a vicious cycle, as represented in Figure 2.

2. Food insecurity in Portuguese households with children: Results from the EPHE Project

Data presented in this chapter was derived from the baseline evaluation period of the EPHE Project in Portugal. The EPHE evaluation study is a prospective two-year follow-up design, which aims to assess the behavioural change in some energy balance-related behaviours and their associated environmental determinants in children, according to their socio-economic status, and its sustainability over time in communities of seven European countries, including Portugal (10). In Portugal, Maia was the selected community, a city situated in the north of the country, in the metropolitan area of Porto. Our sample included 241 families with children aged between 6 and 8 years old, from two public schools in this community. We analysed data from the baseline evaluation period (2013) of the EPHE Project in Portugal. Data on child's energy balance-related behaviours and associated determinants were collected using the EPHE parental self-reported questionnaire (10) and household food security was assessed by the six-item USDA questionnaire (11).

2.1. Food insecurity in EPHE Portuguese households with children

A total of 228 Portuguese households with children from the EPHE evaluation study in Portugal were included in this analysis. Portuguese children included in the study had a mean age of 6.8 ± 0.8 years. During the 12 months in analysis, 25% (n=56) of the households reported to be food-insecure. From those food-insecure households, 21% (n=47) were considered in low food security level and 4% (n=9) in very low food insecurity (Figure 3).

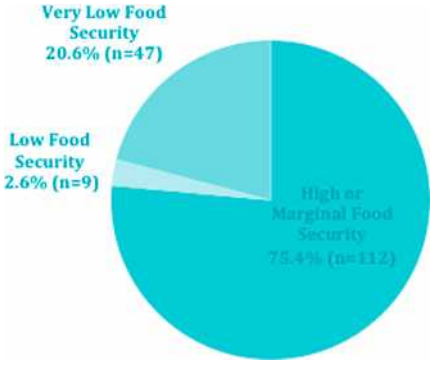

Figure 3: Food security status in EPHE Portuguese households with children (n=228).

2.2. Child's energy balance-related behaviours according to household food insecurity

Table 1 shows that children of food-secure households consumed fruit, salad or grated vegetables, raw vegetables and cooked vegetables significantly more frequently per week, compared to those of food-insecure households. Contrarily, higher values of fruit juices amount, weekly fruit juices consumption, frequency of soft drinks consumption per week, soft drinks amount, soft and diet soft drinks weekly consumption, were observed in children of food-insecure households when comparing to their counterparts of food-secure households.

Furthermore, children of food-insecure households watched TV more frequently during the weekdays and spent more screen time per week (Table 1).

2.3. Social and environmental determinants of child's energy balance-related behaviours according to household food insecurity

Besides the child's energy balance-related behaviours assessment, the EPHE Project also tried to evaluate the social and environmental determinants that might be associated with a child's energy balance-related behaviours. The evaluated social determinants included:

- parenting practices regarding healthy lifestyle of children, parental ability to encourage and facilitate child's healthy behaviours;
- parental permission for energy balance-related behaviours of the child;
- parental behaviour avoiding negative modelling of unhealthy lifestyle;
- parental behaviour communicating healthy beliefs to their children;
- parental rewarding/comforting practices allowing their child unhealthy behaviours;
- parental inability to manage child's behaviours, parental knowledge on recommendations and child's nagging behaviour.

Physical environmental determinants include availability of food at home and related situations where economic determinants like price issues can affect food choices.

The differences regarding the social and physical environmental determinants of child's energy balance-related behaviours according to household food insecurity are presented in Table 2.

2.4. Social determinants

2.4.1. *Parental practices related to a child's healthy lifestyle*

The results for the social determinants related to parental practices, showed that parental demand and insistence for children to eat fruit every day was significantly

more common in food-secure households. Parental allowance for fruit and vegetable intake was also higher in the food-secure households, whereas it was lower for soft drink intake and computer games use, compared to the parental allowance in food-insecure households.

Parents from food-insecure households were more likely than the parents from food-secure households to tell their children that drinking fruit juices, soft drinks and watching TV/playing computer games may lead to making them fat (communicating health belief). Additionally, parents from food-insecure households were also more likely to avoid negative modelling, for fruit juice intake and for watching TV (Table 2).

Parents of food-insecure households tend to allow more frequently their children to drink fruit juices and soft drinks and play computer games as a rewarding and comforting practice. They were also more likely to report an inefficacy in retaining rules with regards to television viewing and computer exposure. Parents of food-secure households ate vegetables together with their children more frequently than parents from food-insecure households. Additionally, parents from food-insecure households were more likely to drink fruit juices and soft drinks together with their children (Table 2).

2.4.2. *Parental knowledge on recommendations*

Parental knowledge on recommendations related to vegetable consumption was greater for parents from food-secure households, while no significant differences were found for parental knowledge on fruit-related recommendations (Table 2).

2.4.3. *Child's nagging behaviour*

Children from food-insecure households were more likely to try to watch TV and play computer games when it was prohibited (nagging behaviour) (Table 2).

2.4.4. *Determinants of the physical environment*

Considering the physical environmental determinants, significant differences according to household food security situation were found only for home availability of fruits and vegetables. Parents of food-insecure households reported lower frequency of fruit and vegetable availability in their households (Table 2).

2.4.5. *Economic environment*

Food insecure households were more sensitive to the price of foods. Parents of food-insecure households were more likely to report that *"I do not give to my child some foods because they cost too much"*, compared to food-secure households.

Table 1: Rounded median values and quartiles (q_1-q_3) for child's energy balance-related behaviours (dietary, sedentary and sleeping behaviour) associated with food insecurity.

Energy balance-related behaviour	Food Security status	N	Median (q_1;q_3)	*P* value
1. Dietary behaviour				
1.1 Fruit and vegetable consumption				
Fruit (frequency/week) *	Food security Food insecurity	171 55	7 (6;7) 6 (5;7)	0.00
Salad or grated vegetables (frequency/week) *	Food security Food insecurity	170 56	6 (4.75;7) 5 (4;6)	0.00
Raw vegetables (frequency/week) *	Food security Food insecurity	170 55	4 (2;5) 3 (1;4)	0.01
Cooked vegetables (frequency/week) *	Food security Food insecurity	172 56	6.5 (6;7) 6 (5;7)	0.01
1.2 Fruit juices consumption				
Fruit juices amount (ml)	Food security Food insecurity	172 56	580 (250;580) 580 (520;580) ‖	0.00
Weekly fruit juices consumption (ml/week)	Food security Food insecurity	171 56	107.1 (35.7;248.6) 248.6 (65.2;455.7)	0.02
1.3 Soft drinks and diet soft drinks consumption				
Soft drinks (frequency/week) *	Food security Food insecurity	171 56	5 (0;1) 5 (0.5;3) ‖	0.03
Soft drinks' amount (ml)	Food security Food insecurity	170 56	250 (250;580) 580 (250;830)	0.00
Weekly soft drinks intake (ml/week)	Food security Food insecurity	169 56	35.7 (0;82.9) 41.4 (17.9;145.4)	0.01
Weekly diet soft drinks intake (ml/week)	Food security Food insecurity	171 56	0 (0;0) 0 (0;0) ‖	0.03
2. Sedentary behaviour				
TV weekdays (h/day) †	Food security Food insecurity	172 56	1 (0.5;2) 2 (1;2)	0.00
TV use (h/week) †	Food security Food insecurity	172 55	10 (7;16) 15 (9;18)	0.01
Total screen time (h/week) †	Food security Food insecurity	172 55	15.3 (11;20) 20 (11.5;25)	0.02
3. Sleeping behaviour				
Wake up time (weekdays) ‡	Food security Food insecurity	171 56	4 (3;4) 4 (4;4) ‖	0.01

* Responses categories: 1. Never; 2. Less than one day per week; 3. One day per week; 4. 2-4 days per week; 5. 5-6 days per week; 6. Everyday, once a day; 7. Everyday, twice a day; 8. Everyday, more than twice a day.
† Responses categories: 1. Not at all; 2. 30 min/day; 3. 1 h/day; 4. 2 h/day; 5. 2.5 h/day; 6. 3 h/day; 7. 3.5 h/day; 8. 4 or more h/day.
‡ Responses categories: 1. At 5 a.m. or earlier; 2. At 6 a.m.; 3. At 7 a.m.; 4. At 8 a.m.; 5. At 9 a.m.; 6. After 9 a.m..
§ *P* values according to Mann Whitney U test.
‖ Higher Means Ranks values for fruit juices amount, frequency of soft drinks per week, weekly diet soft drinks and for wake up time at weekdays were found for children of food insecure households.

Table 2: Rounded median values and quartiles (q_1-q_3) or social and environmental determinants of child's energy balancerelated behaviours (dietary, sedentary and sleeping behaviour) associated with food insecurity.

Energy balance-related behaviour	Determinants	Food Security status	N	Median (q_1;q_3)	*P* value
	1. Social environment				
	1.1 Parenting practices				
Fruit consumption	Parental demand (tell their child to eat fruit every day) *Never (0) – Yes, always (4)*	Food security	172	4 (3;4)	0.01
		Food insecurity	56	3 (3;4)	
	Parental allowance (allows their child to eat much fruit as (s)he likes at home) *Never (0) – Yes, always (4)*	Food security	172	4 (3;4)	0.00
		Food insecurity	55	3 (3;4)	
Vegetables consumption	Parental allowance (allows their child to eat much vegetables as (s)he likes at home) *Never (0) – Yes, always (4)*	Food security	172	4 (3;4)	0.00
		Food insecurity	55	3 (2;4)	
Fruit juices consumption	Communicating health beliefs (tell their child that fruit juices make him/her fat) *Never (0) – Always (4)*	Food security	172	2 (0;2)	0.02
		Food insecurity	54	2 (1;3)	
	Avoid negative modelling (restrain themselves from fruit juices intake because of the presence of their child) *Never (0) – Always (4)*	Food security	172	1 (0;2)	0.04
		Food insecurity	55	2 (0;3)	
	Rewarding/comforting practice (give fruit juices to their child as a reward or to comfort him/her) *Never (0) – Always (4)*	Food security	172	0 (0;1)	0.00
		Food insecurity	56	1 (0;1.75)	
Soft drinks consumption	Parental allowance (If my child asks for a soft drink, I will give it to him/her) *Never (0) – Always (4)*	Food security	172	1 (1;2)	0.05
		Food insecurity	56	1 (1;2)	
	Communicating health beliefs (tell their child that soft drinks make him/her fat) *Never (0) – Always (4)*	Food security	171	3 (1;4)	0.04
		Food insecurity	56	3 (2;4)	
	Rewarding/comforting practice (give soft drinks to their child as a reward or to comfort him/her) *Never (0) – Always (4)*	Food security	172	0 (0;0)	0.02
		Food insecurity	56	0 (0;1)	

Energy balance-related behaviour	Determinants	Food Security status	N	Median (q_1;q_3)	*P* value
Sedentary behaviour (Television and computer exposure)	Parental allowance (If my child asks if (s)he is allowed to play computer games I will allow it) *Never (0) – Always (4)*	Food security	172	2 (2;3)	0.04
		Food insecurity	56	2 (1;2)	
	Parental allowance (allows their child to play computer games whenever (s)he wants) *Never (0) – Always (4)*	Food security	171	2 (1;2)	0.03
		Food insecurity	56	1 (0;2)	
	Avoid negative modelling (restrain themselves to watch TV for leisure time) *Never (0) – Always (4)*	Food security	171	1 (0;2)	0.03
		Food insecurity	56	1 (0;2)	
	Negotiating (When I prohibit my child from watching TV, I find it difficult to stick to my rules and (s)he starts negotiating) *Never (0) – Always (4)*	Food security	172	0 (0;1)	0.02
		Food insecurity	55	1 (0;2)	
	Negotiating (When I prohibit my child from playing computer games, I find it difficult to stick to my rules and (s)he starts negotiating) *Never (0) – Always (4)*	Food security	172	0 (0;1)	0.05
		Food insecurity	56	0.5 (0;1)	
	Rewarding/comforting practice (allows their child to play computer games as a reward or to comfort him/her) *Never (0) – Always (4)*	Food security	172	1 (0;1)	0.01
		Food insecurity	55	1 (0;2)	
	Communicating health beliefs (tell their child that watching TV/playing computer games make him/her fat) *Never (0) – Always (4)*	Food security	171	1 (0;2)	0.04
		Food insecurity	56	2 (0.25;2)	
	1.2 Parental knowledge				
Vegetables consumption	Parental knowledge on recommendations (recommendations for vegetables consumption) *None (1) - 5 or more pieces/portions per day (8)*	Food security	168	5 (5;6)	0.04
		Food insecurity	55	5 (4;6)	
	1.3 Performing energy balance related behaviours (EBRB) together				
Vegetables consumption	Performing EBRB together with the child (We often eat vegetables the whole family together) *Never (0) - yes, always (4)*	Food security	172	2 (1;2)	0.00
		Food insecurity	56	1 (1;2)	

Energy balance-related behaviour	Determinants	Food Security status	N	Median (q_1;q_3)	*P* value
Fruit juices consumption	Performing EBRB together with the child (drink fruit juices together with your child) *Never (0) - yes, always (4)*	Food security	172	2 (2;3)	0.00
		Food insecurity	56	3 (2;4)	
Soft drinks consumption	Performing EBRB together with the child (drink soft drinks together with your child) *Never (0) - yes, always (4)*	Food security	172	2 (1;3)	0.01
		Food insecurity	56	2 (2;3)	
	1.4 Child´s nagging behaviour				
Sedentary behaviour (Television and computer exposure)	Nagging behaviour (If I prohibited my child from watching TV for leisure time, (s) he would do it anyway) *Never (0) - yes, always (4)*	Food security	172	1 (0;1)	0.02
		Food insecurity	55	1 (0;2)	
	Nagging behaviour (If I prohibited my child from playing computer games for leisure time, (s)he would do it anyway) *Never (0) - yes, always (4)*	Food security	172	0 (0;1)	0.04
		Food insecurity	56	1 (0;1)	
	2. Physical environment				
	2.1 Home availability				
Fruit consumption	Home availability (In my home, there are usually different kinds of fruits available) *Never (0) - yes, always (4)*	Food security	172	4 (3;4)	0.00
		Food insecurity	56	3 (2;4)	
Vegetables consumption	Home availability (In my home, there are usually different kinds of vegetables available) *Never (0) - yes, always (4)*	Food security	170	3 (3;4)	0.00
		Food insecurity	56	2.5 (2;3)	
	Home availability (Vegetables served with dinner (or lunch) at your home) *Never (0) – Always (4)*	Food security	170	3 (3;4)	0.00
		Food insecurity	56	3 (2;3)	
	3. Economic environment				
	3.1 Price influence				
Dietary behaviour	I do not give my child some foods because they cost too much	Food security	171	– 1 (-2;0)	0.00
		Food insecurity	56	0 (-1;1)	

* *P* values according to Mann Whitney U test.

3. Conclusions and recommendations

According to the EPHE data, about 25% of the portuguese households with children analyzed in this study were food-insecure with 21% of those households at a low food security level. More specifically, these households reported some inability to acquire enough food due to economic constraints, a reduced quality or variety in their diet without significant reduction of their food intake. In contrast, 4% of the food-insecure households reported that their families experienced changes in eating patterns including the reduction of food intake during the last 12 months due to economic constraints.

Our data showed significant differences between child's energy balance-related behaviours and according to the household food security situation: fruit and vegetable consumption, fruit juices and soft drink intake and total screen time (mainly due to the time spent watching TV) were more prevalent in children from food-insecure households.

In addition, we tried to identify some social and physical environmental determinants that might explain the differences found between the food-secure and food-insecure households in child's dietary and sedentary behaviours. As our study shows, there is strong evidence that food prices are one of the most important determinants of food choices in low-income groups (12). As such, higher costs of healthy foods and lower costs of energy-dense foods might explain dietary behaviours of low-income or food-insecure individuals (12-16). Food availability in the home environment, which is closely linked to economic determinants, also seems to be an important factor that determines food-choice behaviour, with particular reference to fruits and vegetables. Previous studies have shown that food-insecure households report less availability of healthy foods at home (17) and that food availability at home was considered as an important determinant of diet quality in food-insecure children (18).

These data suggest differences in several risk factors for childhood obesity and overweight in a sample of Portuguese families with children. It provides evidence for action regarding the determinants of these behaviours, particularly in those related to family environmental determinants. Physical environmental factors of child's energy balance-related behaviours, such as food costs and availability of healthy foods, seem to be relevant determinants of food choices amongst food-insecure individuals. These findings support the most recent international guidelines from policy documents in the field of food and nutrition. These documents suggest that there is a need to move away from policy interventions focused on citizens' empowerment, to policy interventions that enable changes in food environments. Promoting availability and supporting the physical and economic access to healthy foods is particularly important when aimed at reducing social inequalities in health (19-21). Furthermore, some parental practices that seem to be linked with childhood obesity were more prevalent amongst food-insecure households. To our knowledge, such parental practices could be considered as important targets for interventions to reduce social inequalities in childhood obesity. All these findings will be used to adapt, tailor and improve the EPODE approach implemented via the Maia programme. The EPODE model aims at

changing behaviours through multi-factorial strategies, focused both on individual behaviour and the environment. Modifying habits requires changing perceptions, the microenvironment (e.g. schools, homes, neighbourhoods) and the macroenvironment (e.g. education and health systems, governments, the food industry and society's attitudes and beliefs) so that healthy behaviours prevail. The EPHE Project and its results show that interventions must be adapted to fit the local context and needs from all socio-economic groups.

In conclusion, several inequalities in child's dietary and sedentary behaviours were revealed, and at the same time, factors related to the home food environment and to parental food practices seems to be associated with household food insecurity. Furthermore, this research gives us new insight regarding the different energy balance-related behaviours of children, as well as the environmental and parental practices related with these child behaviours that might explain the link between household food insecurity and childhood obesity.

Our outcomes suggest that future interventions aiming at reducing inequalities in childhood obesity and overweight, should consider social and physical environmental determinants of the child's energy balance-related behaviours. Thus, community-based interventions tailored to the local environment might be a type of intervention that should be taken into consideration when the objective is reducing inequalities in childhood obesity.

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Part 2

Epode for the Promotion of Health Equity project

Chapter 4

EPODE for the Promotion of Health Equity

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ephestory.eu

1. From EPODE European Network to the EPODE for the Promotion of Health Equity project

In 2008, EPODE (Ensemble, prévenons l'obésité des enfants) received the support of the European Directorate-General for Health and Consumers (DG SANCO) for the implementation of the **EPODE European Network project** (EEN, Grant Agreement 2007 327, www.epode-european-network.com, 2008-2011). The EEN project aimed at facilitating the implementation of community-based interventions using the EPODE methodology. The outcomes of this project have been published in a book of recommendations for preventing obesity. This book is available on the Internet. This document gathers important contributions from 4 associated university teams (VU-Amsterdam, Gent, Zaragoza, Lille 2), the EPODE International Advisory Board, and collaborating partners from multiple sectors and disciplines including the coordination units of on-going EPODE programmes in France (EPODE), Belgium (VIASANO), Spain (THAO), Greece (PAIDEIATROFI), the Netherlands (JOGG) and Romania (SETS). Over the last 3 years, the EEN has been successful in institutionalising and reinforcing

the scientific, political and resource basis of European EPODE dynamics, reaching now more than 350 European towns and being the largest community-based childhood obesity prevention initiative.

While this deployment is promised to continue through regular EPODE European coordination activities managed by Proteines, the agency founder of the EPODE methodology, the EEN grant with the European Commission has come to its term. The positive outcomes of the EEN project, which has been a tool to favor discussion across sectors, programmes and disciplines to enrich EPODE implementation at European level, lead today EEN partners to **support the continuation of the collaboration with the European institutions**.

Proteines, with the support of its EEN associated partners, its private partners and others, submited a **European project** to the **2011 Call for proposals** for projects of the Directorate-General for Health and Consumers. The nature of EPODE goals and objectives and the current challenges and priorities widely documented in the scientific literature, in the public health programmes at Member States and European levels and via experiences in the field, have guided Proteines and its associated partners to prepare a project addressing **Call No. 3: "Reducing health inequalities: preparation for action plans and structural funds projects".** This chapter specifies the objectives, organisation and activities of this application called **EPODE for the Promotion of Health Equity** (EPHE, Grant Agreement 2011 12 09).

2. The EPODE for the Promotion of Health Equity project

2.1. Objectives

EPHE builds on **the EPODE methodology** and on **the outcomes from the EEN book of recommendations** to create synergies within the EU research framework programme and to favor multiplier effects and sustainability. EPHE aimed to analyse, from 2012 to 2015:

- the added value of the implementation of the EPODE methodology for the reduction of socio-economic inequalities in health-related diet and physical activity behaviours of families with children aged 6 to 12 living in 7 different European communities;
- opportunities to sustain the implementation of EPHE best practices in other EU regions and Member States (MS) via EU structural funds focusing on the replicability and transferability at a larger scale of those to leverage the experience to develop action plans by MS and to make use of structural funds for the promotion of health equity.

EPHE works at community level in key settings to develop integrated action locally.

2.2. Target

EPHE targets the whole community **focusing on most deprived families with children aged 6 to 9**. Studies show investment in early years is one of the greatest potentials to reduce health inequalities within a generation. An important secondary target group in the EPODE methodology is the wide variety of local stakeholders, who can initiate micro-changes within the ecological niche of children and their families through local initiatives fostering better and balanced eating habits and greater physical activity in everyday life (parents, schools directors and teachers, social workers, leisure centres educators, infancy professionals, media, municipal services, etc.). These stakeholders are also particularly targeted in the EPHE project. Doing so, the EPHE target segmentation strategy fits into the second EU health programme putting "emphasis on improving the health condition of children and young people and promoting a healthy lifestyle and a culture of prevention amongst them".

2.3. Territory

Poor average levels of health are more likely to be observed in vulnerable and socially excluded groups, which may be related to risk factors such as poor housing, poor nutrition and health related conditions, access to health care, discrimination. These populations should therefore require particular attention in the implementation of actions in the field. The priority was therefore to include communities located in European regions and Member States where the premature mortality exceeds 20% of the EU average and to include as well communities with different socio-economic profiles.

The EPHE project focuses on **7 pilot communities** presenting mixed populations per se in terms of socio-economic indicators, but also socio-economic disparities across the European regions selected. Additionally, communities have been selected in 7 different countries having (or interested in implementing) an EPODE-like programme on their territory, which represents a key, concrete and medium-term opportunity for the dissemination of EPHE findings to other communities and Member States.

2.4. EPHE's Organisation framework

2.4.1. *EPHE's Central Coordination Team*

Managed by Proteines, which developed the EPODE methodology in 2003, the **EPHE Central Coordination Team** was in charge of establishing the framework of the project, ensuring the good implementation of the pilot study and surveys, and coordinating events and meetings throughout the course of the project. In this regard, and based on the EPODE link principles, EPHE was structured around two boards: a scientific board and an operational board (Figure 1).

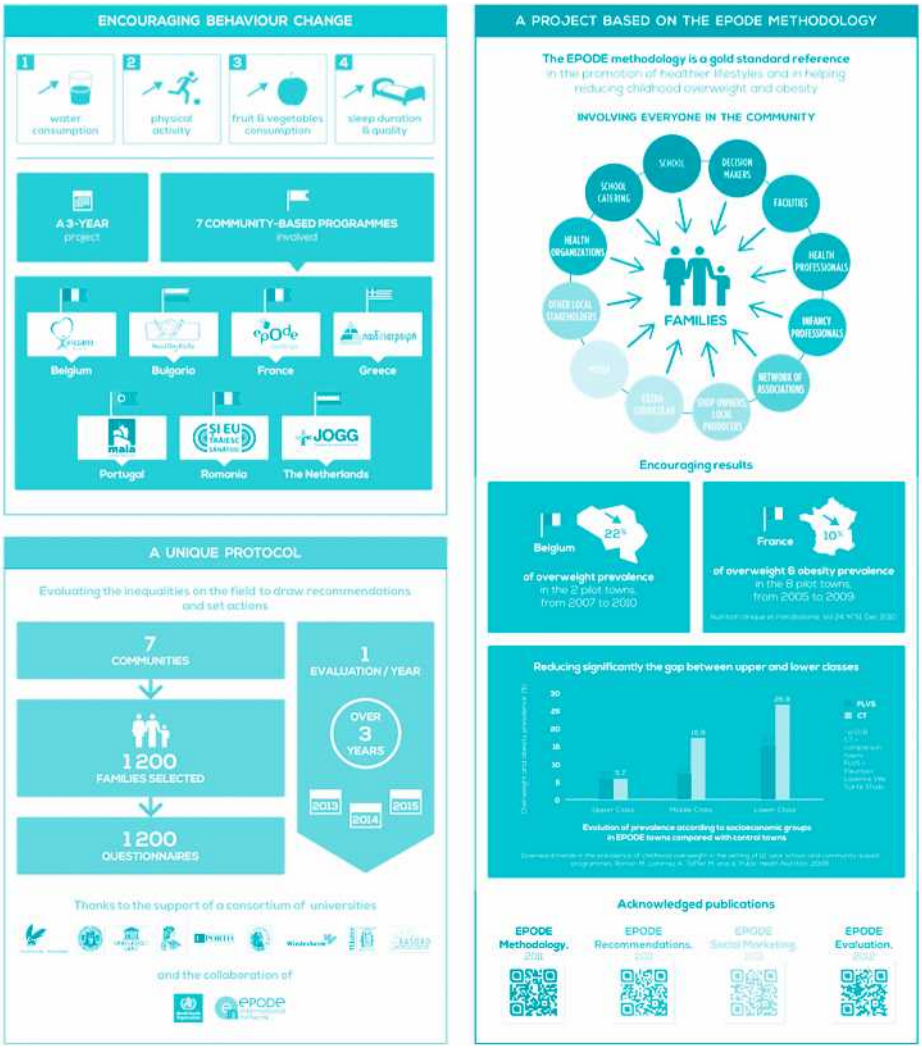

Figure 1: Infographic presenting the EPHE project, in a nutshell.

2.4.2. *EPHE's Scientific Advisory Board*

The EPHE Scientific Advisory Board is composed of 1 expert from each of the 7 countries and from the EPHE collaborating partners. The SAB is in charge of:

- designing, as agreed upon, an intervention evaluation framework for a common protocol for data collection and review across communities;
- monitoring the Evaluation Data Analysis, the survey on health-related diet and physical activity inequalities according to social economic status (SES) indicators ;
- discuss and exchange with the Operational Advisory Board on the feasibility of the evaluation's implementation and follow-up.

These national academics provide the national teams with a scientific support, thus accrediting their message and actions. They also take part in the evaluation protocol development that was led by VUA (Free University of Amsterdam). In this way, they analyse and transpose it through economic and cultural context, which can differ amongst countries. They validate translation of questionnaires, and check the integrity of transposed messages. Finally, they have access to national data, which allows them to publish project results.

Members:

Free University of Amsterdam – The EMGO Institute for Health and Care Research (EMGO +) is an interfaculty research institute of the VU University Medical Center and the VU University Amsterdam where researchers from three faculties (the VU University Medical Center, the Faculty of Psychology and Education, and the Department of Health Sciences from the Faculty of Earth and Life Sciences) have joined forces to further improve public and occupational health, primary care, rehabilitation and long-term care, by means of multi- and interdisciplinary research.

BASORD – Promotes healthy nutrition, informs the general public, including the disadvantaged population, on the problems of adult and childhood obesity and has created a network of nutrition and obesity specialists targeting health inequalities. It collaborates with IASO for the organisation of SCOPE courses in Bulgaria, and is a partner of EU projects such as DiOGenes and DIETS. It has strong relations with the main Bulgarian mass media, and the Bulgarian Radio is an official partner of our campaigns.

University of Ghent – A research niche with a multidisciplinary scope within the Department of Public Health uniting expertise from medicine, biomedical and nutrition sciences, epidemiology, public health, health economy and local politics. Involved in EU projects: HELENA, IDEFICS, EEN project and the EU FP7 « ToyBox ». This multidisciplinary research platform has a unique potential for groundbreaking research in obesity prevention.

Directorate-General of Health in Portugal – The Platform Against Obesity is a Division of the Portuguese Directorate-General of Health (DGS). The mission is to create conditions for the rise and sustainability of effective approaches in the prevention and control of obesity in Portugal. Since January 2011, the Platform coordinates the WHO European action network on Obesity & Inequalities to increase the knowledge about socio-economic inequalities and obesity in the European region. DGS also runs national observational studies related to food security.

University of Windesheim – A research centre for prevention of overweight in Zwolle (OPOZ), whose main aim is to support and carry out research in developing, implementing and evaluating Zwolle's Healthy City programme. The city of Zwolle is the first EPODE-like city (JOGG-city) in the Netherlands. A key aspect in the research team of Zwolle is the strong collaboration with professionals in the area of obesity prevention and management, including the community health services and the municipal council.

University of Zaragoza – GENUD is a consolidate research group involved in several European financed projects regarding lifestyles, social inequalities, growth and development in children and adolescents. GENUD has experience in social marketing, key element due to the strategies used for the reduction of health inequalities. GENUD published 155 international papers in the last 5 years and coordinated the HELENA project. Currently, GENUD is also participating in projects such as IDEFICS, EPODE, ToyBox, etc.

University of Porto – FCNAUP is the only Portuguese public university completely dedicated to Human Nutrition. FCNAUP has one of the highest publication rates at the University of Porto by PhD holders FTE (full time equivalents). The Faculty has an excellent record of participation in EU funded research projects in the area of public health and nutrition, such as: ANEMOS, TRUSTINFOOD, ENHR II, DAFNE, PRO CHILDREN, PRO GREENS.

2.4.3. *EPHE's Operational Board*

The Operational Board was composed of representatives of each of the 7 programmes undertaken by the participating countries. These representatives generally were the national coordinators of the CBPs, and are experienced in managing people implementing the programme on a local level; some of them combined these two functions, and handled the national coordination and local project leadership at the same time. The main role of the Operational Board was to be the link between what the Scientific Advisory Board decided on theoretical level and what was expected in practice from the local project managers. The SAB provided a scientific background to the coordinators, whose role was to ensure the good implementation of the programme. They were in charge of developing innovative training, coaching and empowerment methods from national to local actors, involving them in the planning processes, and trusting them with sufficient flexibility to adapt actions to local context. Additionally, particular attention was given to the creation of messages and actions solution-oriented and designed to motivate positive behaviour changes, without stigmatising any culture or people.

Members

EPODE Flanders Lys – This is the cradle of the EPODE methodology. Located in the North of France, the Community of Towns Flanders Lys, is where the methodology was developed and evaluated for the first time, and where it was proved effective. The EPODE Flanders Lys programme was represented by two local project leaders within the EPHE Operational Board.

VIASANO – Viasano is the Belgian adaptation of the French EPODE methodology. Viasano is active in 16 Belgian towns from all the Belgian regions. The original methodology has been adapted to some Belgian particularities such as the multilingual character of the country, which led to a multilingual expert committee, and campaigns in 2 different languages (French and Dutch). Viasano is managed by Protein Health Communication in Brussels, an affiliate of Proteines, which is the main partner of

the EPHE project. Viasano was represented within the Operational Board by its two national coordinators.

PAIDEIATROFI – Is the Greek adaptation of the EPODE methodology. The programme was launched in 2008 with 5 pilot towns; 14 towns are currently implementing it locally. The Paideiatrofi messages are based on scientific recommendations and regularly enriched by field experience and good practice sharing. Nostus Communication & Events manages the programme's national coordination. Paideiatrofi was represented within the Operational Board by its two national coordinators.

SETS – PRAIS Foundation initiated, in March 2011, for a 5-year period, the national movement "I'm living healthy, too!". SETS is active in 6 districts in the city of Bucharest. SETS was represented within the Operational Board by its two national coordinators.

HEALTHY KIDS – In Bulgaria, this long-term sustainable project is implemented in 2 regions of Sofia, the capital of the country. It aims at promoting healthy lifestyle in primary schools. Through education, communication and motivational techniques, the project focuses on children between 7 and 13 years of age, as well as their parents and teachers. The Healthy Kids project was represented by its national coordinator.

MAIA – In Portugal, this initially school-based interventions wanted to scale up these initiatives to the community level and use the EPHE project to benefit from the exchange of best practices from the EPHE operational Board.

JOGG – The JOGG programme is an EPODE methodology-based programme. One of its pilot cities, Zwolle, is a very experienced town in the prevention of childhood obesity. Since 2010, the town has been implementing the EPODE methodology, counting on the active collaboration of all local stakeholders from education, healthcare, business, sports, housing, welfare and mass media to make healthy eating and exercise easy and attractive for everyone. The local project leader of Zwolle represented the town in the Operational Board; she's also a trainer on the national JOGG programme.

3. EPHE's methods and means

3.1. EPHE's evaluation framework

The main objective of the EPHE project was to evaluate the added value of community-based programmes (CBPs), based on the EPODE methodology, in reducing health inequalities linked to diet and physical activity.

The EPHE interventions focused on 4 themes:

- the promotion of water consumption;
- the promotion of an active lifestyle;
- the promotion of fruit and vegetables consumption;
- the promotion of an adequate sleeping behaviour.

To achieve those objectives, the EPHE Operational Board had the support of two background studies:

- a literature review led by the University of Zaragoza to identify levers used in previous publications/projects to reach out deprived population;
- an evaluation baseline to identify main priorities to be integrated by each of the CBPs in their EPHE interventions strategies.

With respect to the EPHE's framework and its main objective, the evaluation protocol assessed indicators related to the behavioural changes on the 4 themes in order to establish wether or not there are differences, and the potential impact of CBPs' interventions on its reduction. The SES, the household food security[1] and the parental body perception were also assessed, for descriptive purpose only.

Based on these outcomes, each CBPs from the EPHE Operational Board tailored its interventions plan in order to have a greater impact on low SES in each community.

Study Design

This was a prospective two-year follow-up study. It assessed the change of energy balance-related behaviours of children and their determinants, within the family environment, and its sustainability over time according to their SES.

The three evaluation periods were held as follow (Figure 2):

- May-June 2013: Evaluation Baseline;
- May-June 2014: Evaluation of EPHE Outcomes;
- May-June 2015: Evaluation of EPHE Sustainability.

For two years, the same families were followed and their energy balance-related behaviours and determinants measured three times.

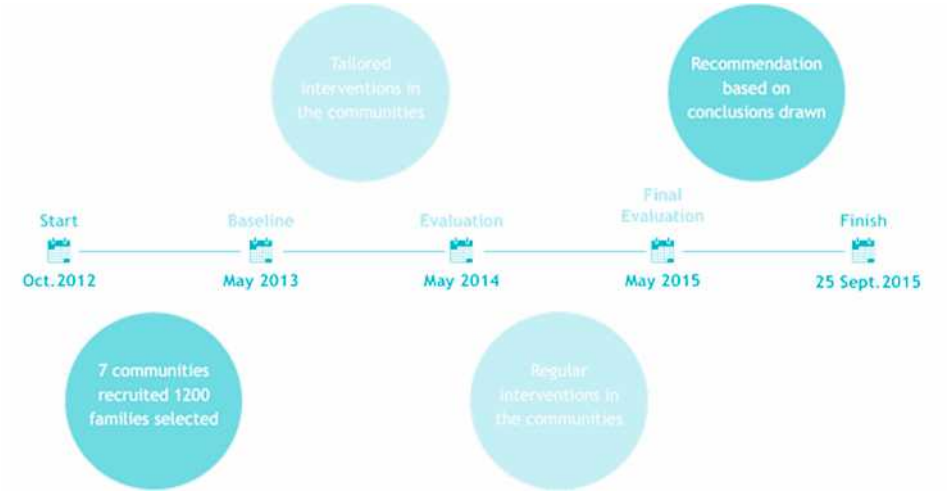

Figure 2: The timeline of the EPHE project.

1. World Food Summit (1996) definition: *"when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life"*. The term refers here to the availability of sufficient food in the household.

3.2. Methods

3.2.1. *Self-reported parental questionnaire*

Parents were asked to anonymously answer a questionnaire with regard to:

- the family's SES and the household's food security level;,
- their children's energy balance-related behaviours;
- their perception of a healthy body.

Designed to measure the aforementioned determinants, and conducted by a 2-year prospective follow-up, the questionnaire helped assess the behavioural changes, which reflect the EPHE's interventions.

The average time to fulfil the questionnaire was around 45 minutes.

3.2.2. *Development and analysis of the parental self-administrated questionnaire*

The EPHE parental questionnaire was developed using validated items from other questionnaires. The assessment of the energy balance-related behaviours and determinants was carried out using items from other European studies (PRO-GREENS, ENERGY) that have been assessing similar determinants. In addition, translations of these questionnaires into several languages –amongst which those necessary to our study– were made and validated.

Similar methods followed regarding the items for the SES assessment, based on those used in large European socio-economic surveys. Concerning the household food security levels, a short version of a respective questionnaire was obtained, although developed for American citizens. However, this does not limit the capacity of our questionnaire to detect the level of food security of European households.

The questionnaire was translated in every language, respective to the participant countries and back-translated into English. It was mandatory for all participant communities to use the same version layout and format of questions. All versions are available on the website.

If we consider the EPHE project in terms of timing, we can define the role of the coordinators as following:

3.3. Preparatory phase

November 2012–January 2013 - In each of the 7 represented countries, an intervention community (for a 24-month period) was selected in collaboration with the Scientific Advisory Board.

In each intervention community, the local authorities had to commit to the EPHE project and mandate a local civil servant with cross-disciplinary skills to coordinate the community's health equity promotion project. This person would be managed

by the national coordinator in order to generate peer-to-peer dynamics and social multiplier effects that would increase the outreach and sustainability of the intervention. Over the two-year study, each community benefited from a financial support for direct costs associated with the organisation of actions.

3.4. Sensitisation and mobilisation phase

February 2013–May 2013 - Once the community was selected and the local authorities had designated their local project manager, the EPHE population and the rest of the community had to be informed and motivated about the project. National coordinators, together with local project managers, had to decide upon tools to empower data collection and the involvement of different actors (school directors, teachers, parents, children, etc.). The role of the Operational Board was to propose a number of motivation tools for the different target groups:

- Directors: Being part of a European project was proven an important incentive for school directors. It gave a good image of the schools and showed that the directors were socially committed. Besides, at the end of this project, all the pupils benefited from the results of the project. An extra motivation was the organisation of a big show at school at the end of the project;
- Teachers: They benefited from activities organised in their class during the EPHE project. The children learnt about healthy habits and the teachers were supported by the local Viasano team. The Operational Board also proposed to invite the teachers to a dinner.
- Parents: To motivate the parents to fill in the evaluation questionnaires, the Operational Board proposed to give them a coupon (to buy fruit, vegetables, diner at the school restaurant, etc.) when collecting the questionnaires.
- Children: In order to motivate the children to insist with their parents on filling in the questionnaires, the Operational Board proposed to give them a nice gadget when they returned their questionnaire.

3.5. Evaluation No. 1

May 2013–June 2013 - For this first evaluation period, the role of the Operational Board was to supervise the distribution and the collection of the questionnaires as well as the follow-up and anonymity process. The questionnaires along with envelopes were delivered to the teachers, so that they could pass them on to the children in their classes, who would consequently bring them home to their parents. Each questionnaire had a numeral code printed on every page. A list had to be created containing each number together with the name of the child to whom the number had been assigned. This was a crucial step for the whole course of evaluations to be accurate.

After the parents filled out the questionnaires, they had to seal them up in the provided envelope, as to ensure confidentiality. The children then returned them to their teacher. At that moment, the teacher had to note down how many questionnaires

out of those disseminated had been returned. Finally, the local project managers collected them at each school. The National Coordination Teams (NCTs) would then collect the communities' data and mail the original documents to the Free University of Amsterdam, which is the central point of the data analysis, and every NCT would keep at least one hard copy of each document, for safety reasons.

3.6. EPHE intervention period

September 2013–May 2014 – Starting from September 2013, community-based interventions were organised by local EPODE teams in the selected communities, targeting the whole community and focusing on the most deprived families. The coordinators of the Operational Board were responsible for keeping these activities on the right track. The Operational Board insisted on the importance of starting from regular recurrent EPODE or EPODE-like activities to then adapting them to the EPHE framework. Next to these activities, a number of specific EPHE interventions were organised. These interventions focused on 4 main topics:

- fruit and vegetables consumption;
- water consumption;
- the quality and quantity of sleep;
- the promotion of physical activity.

The role of the national coordinators was to arrange an action plan in agreement with the local project managers in order to assure regular activities all along the "EPHE year". The challenge was to organise activities on community level in association with different local actors, especially targeting the EPHE population and the deprived populations. During the intervention period, this action plan had to be regularly completed with relevant activities within the town in order to keep track of the interventions that could induce behaviour change.

National coordinators created action sheets about their best activities to engage with other coordinators and share experiences and best practices across the EPHE network.

3.7. Evaluation No. 2

May 2014–June 2014 - A second period of motivation and sensitisation preceded this second evaluation. The coordinators together with the local project managers incentivized the partakers through motivating activities based on the four topics just before the evaluation, and a number of motivation tools. This second evaluation established the changes in the behaviour of the selected families in comparison to the baseline.

3.8. Regular EPODE(-like) activities

During this second period, regular EPODE or EPODE-like activities within the community would be organised, similar to those carried out before the EPHE project started.

The role of the Operational Board was to keep working with the selected communities to ensure the political willingness over the year. The aim was to make sure that the population would not forget about the project in order to assure a good response rate during the last evaluation too. The objective of this period was to analyse whether the behaviour changes induced by the EPHE interventions within the EPHE population would be maintained by mere presence of general EPODE activities within the community.

3.9. Evaluation No. 3

Eventually, the most important responsibility of the Operational Board was to motivate the EPHE population to fill in the questionnaire one last time, which was expected to be a rather difficult task. Since the activities preceding this evaluation were not as remarkable as during the EPHE intervention period, people could have forgotten about the EPHE project and be lose interest in the results. The coordinators had to reframe the project without stigmatising anyone and demonstrate the importance of this final revaluation and results for the population.

The objective of this third evaluation period was to establish whether the changes in the energy balance-related behaviour of the selected children and their families – observed during the second evaluation after a period of intensive interventions– had been maintained after one year.

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Chapter 5

EPODE Flandre Lys, France

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Flanders Lys website: cc-flandrelys.fr

1. EPODE Flandre Lys programme overview

1.1. Community of Towns Flanders Lys (CTFL)

The Community of Towns Flanders Lys is located in the North of France, about 30 kms from Lille and across the river from the Lys.

CTFL, uniqueness relies primarily on the EPODE Flanders Lys programme implementation in its 2 departments, the North and the Pas-de-Calais. Established in 1992, the EPODE Flanders Lys programme includes 8 municipalities, 4 in the North (Merville, Estaires, Haverskerque and La Gorgue) and 4 in the Pas-de-Calais (Fleurbaix, Laventie, Lestrem and Sailly-sur-la-Lys).

The Community of Towns Flanders Lys includes 38,932 inhabitants over a territory of 32.124 acres.

The Community of Towns Flanders Lys is a public entity of inter-municipal cooperation.

Its community council is comprised of 41 advisors elected by a municipal council of 8 common members working for the emergence of projects pertaining to community interest.

Delegates, under the authority of the President, vote and deliberate on draft projects prepared in committees and proposed by the community bureau.

An administrative team of 30 people implements actions related to the decisions of the Community Council.

These projects are in different fields of action within the CCFL, which are:

- Economic Development;
- Urban Planning;
- Tourism, Sports and Recreation;
- Sustainable Development and the Environment;
- Habitat and Social Affairs;
- Youth and Culture;
- Health and Early Childhood.

The EPODE Flanders Lys programme coordinates different actions concerning the final field of action, Health and Early Childhood.

However, given the transversal nature of this programme, elected officials strive to be active in CCFL's other fields of action as well.

1.2. Programme: EPODE Flandre Lys

Based on a proposal by 2 French doctors, Professor Pierre Fossati, President of the French Nutrition Society and Chief of Diabetes and Nutrition at Lille Regional Centre Hospital and, Dr Jean-Michel Borys, Nutritionist and Endocrinologist, the towns of Fleurbaix and Laventie agreed to put in place the "Fleurbaix-Laventie Ville Santé" (FLVS) study. Its objective was to verify if the nutrition information given to children by teachers in the schools of those towns had a positive impact on their knowledge, behaviour and eating habits and on those of their whole families.

Conducted from 1992 to 2004, the study presented results that have been the subject of numerous publications and that are still referred to today by the leading global experts in the field of nutrition.

The nutrition information provided in schools to children on various themes including balanced diet helped indirectly educate families. Within 5 years, the behaviour and habits of the population had significantly improved. The health impacts were as follows: in Fleurbaix and Laventie, the prevalence of childhood obesity did not increase in 10 years while it doubled during the same period in the region of Nord-Pas-de-Calais.

Building on the FLVS study results, the Food Habits and Weight Observatory launched the EPODE programme (created to prevent childhood obesity) in January 2004 and included 10 pilot cities across France.

In 2006, the EPODE programme extended to a network of EPODE towns, thus integrating the municipalities and communities willing to commit to this public health programme.

It is for this reason that, in 2006, the Community Council of Flanders Lys, relying on the success of "Fleurbaix-Laventie Ville-Santé", gave its approval for the adoption of the EPODE programme across its entire territory.

Building on the achievement of the "Fleurbaix-Laventie Ville Santé" model, the EPODE programme is designed to help families change their behaviour and sustainable lifestyle for a balanced diet and regular physical activity, with the aim to maintain good health.

1.3. Organisation

1.3.1. *At central and local level*

To promote the project and the implementation of actions by elected community representatives, a technical team has been formed and is composed of the following:

- Project coordinator:
  Commissioned to make the link between elected representatives and field actions. The coordinator brings together all the local actors, communicates and informs, initiates actions in the field and seeks partners.
- Dietician:
  Commissioned to secure the lifestyle and diet guidelines for health messages. The dietician organises the implementation of the programme's actions in cities and participates in school menu creation.

1.3.2. *Partners*

Collaborate to motivate the parents:

- the EPHE coordination team;
- the Inspection Académique;
- the teaching staff of educational establishments;
- the Health commission of Flandre Lys.

1.4. Activities

According to the projects and actions in progress, the team works in close collaboration with all of the CTFL services and, more specifically, the sports, youth, childhood and communications services.

A medical expert has been appointed to ensure that doctors in the territory have joined the programme. He is responsible for informing and mobilising health professionals on the different actions of the programme.

2. Social Marketing Activities

EPODE Flandre Lys is **an action based programme organised around different themes** to bring all of the programme's actors together around the same health message. A theme is chosen on an annual basis. Prevention messages revolve around various topics in connection with a balanced diet or regular physical activity.

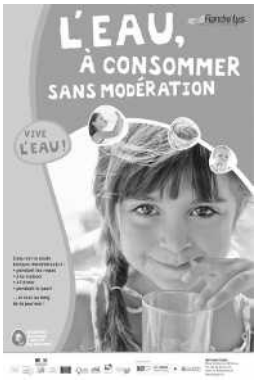
Since 2007, 8 themes have been treated under the EPODE Flandre Lys programme.

Year	Theme	Message
2007	H2O, soif de savoir !	The importance of hydration
2008	La santé, ça commence à table !	The benefits of a balanced diet
2009	Jouer, c'est déjà bouger !	Play to practice regular physical activity
2010	Prenons rendez-vous avec les fruits !	The importance of eating fruits and vegetables
2011	À table, c'est chacun sa portion !	Intake is different at different ages
2012	Manger ensemble, c'est tellement meilleur !	Enjoying eating well together
2013	Dormir, c'est vital !	The needs and benefits of sleep
2014	Bouger, se dépenser, c'est bon pour la santé !	The importance of performing physical activity regularly

Various communicaton tools have been developed to convey health messages:

<u>Informative posters</u>
They convey the main messages of prevention.

<u>Flyers</u>
They present the prevention messages and user tips for facilitating implementation of the recommendations.



The CCFL strategically disseminates the posters and flyers to the public via:

- Schools
- Nursery schools
- Childcare centres
- Recreation facilities
- Sports facilities
- Libraries
- Media libraries
- Halls
- Medical and paramedical structures
- Shops

Methodology guides

Targeted at stakeholders working with children, the guides contain different activities.

Letter to doctors

The letter informs physicians about the current theme and the various related recommendations.

Diagram about how themes are disseminated

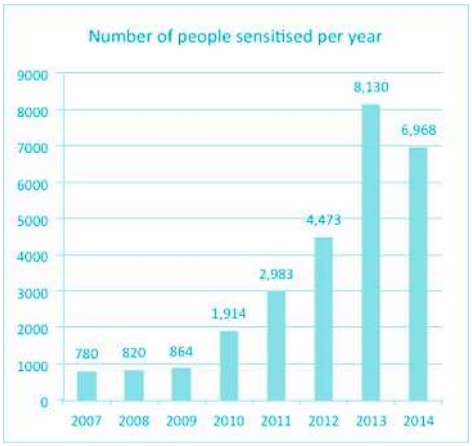
Activities and achievements of the EPODE Flandre Lys programme

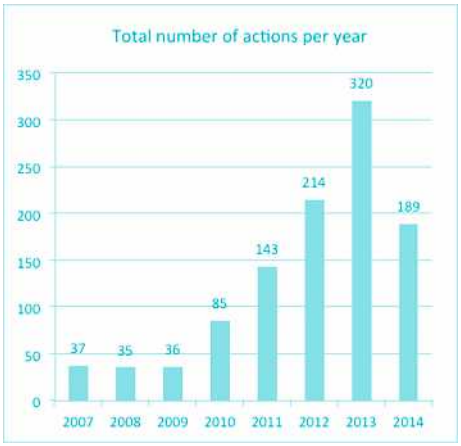
Prevention tools

Several pedagogical tools have been developed so that all stakeholders (teachers, facilitators, sports educators, child educators...) can communicate prevention messages associated with various themes and work with the public.

Each tool has been edited with an action plan that helps identify the objectives of the activity, its roll-out and the requisite materials.

These kits have resulted in a large number of actions being implemented by health services and local actors.





The programme actions for obesity prevention

In addition to the many actions carried out with children throughout the year, 2 devices were put in place to promote the programme to the general public.

Vitality Day (La Journée Vitalité)

This event is organised on-site by EOLYS (child and adult play park) and takes place on a Sunday, in June or September, accommodating approximately 4,000 people. This day represents an opportunity to present the child actions to parents through fun workshops, as well as engage them in physical activity as a family with their children: challenges on inflatable structures, workshops about sport initiatives, etc...

Le Pass' Vitalité

To promote the EPODE Flandre Lys programme amongst the population, the team is present during major events on the CTFL territory. These events are in close connection with the philosophy of the programme.

- The EPODE Flandre Lys-EOLYS Vitality Day
- The Tomato and Traditional Vegetable Feast, Haverskerque
- The better living market, Lestrem
- Cyclocross Championship, EOLYS
- The Nautical Base Flandre Lys
- Market for flowers and vegetables, Fleurbaix

A "Vitality Pass" was implemented in 2013 to encourage families to participate in these events in conjunction with the promotion of a balanced diet and/or regular physical activity.
Families validate their attendance with the EPODE team when they come to the events. To reward participants for their loyalty, a lottery is held with great prizes for 3 lucky winners.

Action on fruits

Since 2008 and in partnership with the Northern Primary Disease Insurance Fund (CPAM), the fruit action is carried out in all kindergartens across the territory.
Each year, 1,700 children discover or rediscover 22 seasonal fruits.
These discoveries are carried out by school teams through animated tastings.
Various support tools have been developed by EPODE and given to professionals: notebooks for the young food tasters, sheets explaining taste, and a brochure for tasting different fruits.
Each class enjoys a session of nutritional education provided by a nutritionist from Flanders Lys or a moderator from the CPAM health prevention.
Due to its success, the action has been extended to all structures concerning childhood care with the tasting of 6 different seasonal fruits. The first edition of this action is called "Little Bear Is Looking for the Shape".
This serves as an effective model of an EPODE action, since its success requires the mobilisation of actors from each sector:

- the CTFL, which finances the purchase of fruits and develops educational tools;
- the municipalities, who purchase and deliver the fruits to schools;
- the teachers, who conduct various discovery sessions with the children.

Multisport platforms and childhood games

Various sport and recreational facilities have been installed in each of the Flanders Lys towns to promote and assist the populations to practise regular physical activity. These achievements are the perfect illustration of the programme coordination with other CCFL fields of action: "Youth" and "Sports and Leisure".

Recreation courses

Still within the physical activity context, is the action to encourage children to spontaneously perform physical activities during recess. This has been achieved by remodelling 27 schoolyards with traced/painted games on the ground.

Several months of study were required to propose an individualised project, compatible with the characteristics of each location.
Each school received a sports kit to optimise the use of these schoolyard games.

Assistance in the project implementation: "Call for Projects"

To promote project implementation dedicated to balanced diet and/or regular physical activity in the territory, the Community of Towns Flanders Lys implemented calls for EPODE projects.
The call for projects can financially support schools, associations or communities who are willing to put in place a project in relation to the philosophy of the EPODE programme. The maximum amount of support is set at €500.

Evaluation

To assess the impact of the programme on the height and weight of the children in each territory, the CCFL Health Service conducts a collection of these measurements on 4,500 children aged 5 to 11 years every 5 years.
The first evaluation was directed in 2008 to help draw up an initial diagnosis and the second in 2013 to understand the evolution over 5 years.

3. EPHE community

3.1. City selection

The first phase of implementation: CCFL Health Commission selected the 2 cities Estaires and Merville according to the criteria recommended by the Scientific Committee.

3.2. School selection

In order to propose the study to the 2 schools targeted by the CTFL Health Commission, it was necessary to obtain validation from the Academic Inspectorate (AI) regarding the implementation of this study at school.

Accordingly, a meeting presenting the programme convened:

- the EPHE Coordinator;
- the EPHE Scientific Director;
- the CTFL President;
- the EPODE Flandre Lys Coordinator;
- the Academic Inspectorate (AI);
- the technical adviser and doctor of the AI.

After examining the project objectives and models, the Academic Inspectorate agreed to implement the study in both schools: Louis-Pergaud in Estaires and Victor-Hugo in Merville.

As for the academic inspection, the CTFL Health Service together with the elected official in charge of educational affairs for the communes met the directors and teachers from the schools to obtain their consent to carry out the study.

They agreed without any hesitation to participate in this plan. Indeed, health prevention issues are at the heart of the educational project of their establishments.

Prevention actions were in line with the field of expertise "Discoveries of the world" included in the grade 1 curriculum.

3.3. Family selection

A key element for the implementation of the study was to define the recruitment of families. The pedagogical teams seemed more reserved about this task.

To qualify a sufficient study cohort, a strategic work was conducted with directors and teachers from each of the schools in order to identify the insights that would assist in the recruitment of the families.

It appeared that an official letter would not achieve the objective.

Louis-Pergaud School in Estaires
It was decided with the pedagogical team that the CTFL Health Service would hold a meeting for grades 1 and 2 at school. In fact almost 90% of the parents were present at this meeting.
59 families out of the 65 present committed

Victor-Hugo School in Merville
"A time to taste different foods" event was organized in grade 1 and 2 classes, during which the CCFL Health Service raised awareness and proceeded with the recruitment of families.
87 families out of the 114 participating families committed

The families from both schools were presented the study objectives, and proposed roll-out timeline. They also received a document outlining all of the steps and terms of their commitment.

3.4. Motivational tools: Identification of a strategy to promote the active participation of families

The concern shared by the families with respect to participation in the study was mainly based on the required number of questionnaires to be completed and returned at the end of each phase of the study.

In order to motivate the parents, it was agreed between all the partners listed below:

- the EPHE coordination team;
- the Academic Inspectorate;
- the teaching staff;
- the Flandre Lys Health Commission,

that a motivational gift would be offered to each family upon the return of a completed questionnaire to thank them for their involvement.

The gifts were one of the following items:

- €15 for the purchase of fruits and vegetables (Questionnaire 1 and 3)
- a €10 one-hour nautical activity for 2 at the Nautical Base of Flanders Lys (Questionnaire 2)

Questionnaire 1	Questionnaire 2	Questionnaire 3
Participation 82%	Participation 79%	Participation 77.6%

School principals were very satisfied with the return rate of completed questionnaires as compared to their experiences on similar actions.

4. Interventions undertaken

Actions to raise awareness

The second phase of the study was dedicated to raising awareness amongst children around the four themes identified by the EPHE Scientific Community:

- Fruit and Vegetables;
- Water;
- Physical Activity;
- Sleep.

Actions were conceptualized and they inspired 65 "animated" sessions conducted with the 179 children involved in the study.

After each session, the parents received written information describing the action that involved their children.

Actions in response to the first results

The initial results of the study revealed that the major problem for parents was learning how to say "no".
It was therefore imperative to direct future EPHE actions to raise awareness amongst parents about the importance of their role as educators to guide their children's health.
Accordingly, the parents received a flyer with information based on scientific recommendations per theme and parenting tips in order to promote compliance.
Then families were invited to 2 sessions for a total of one half-day on parenting skills.

Session 1 - parents participated in an exchange with a psychologist on the importance of saying "no";

Session 2 - brought parents and children together so parents could learn how to create a positive change in behaviour and in the habits of their children.

The action of the second phase was built around water and physical activity themes.

In the first workshop entitled "Pour l'eau, créons des slogans rigolos !" parents and children worked together to find different slogans promoting water consumption.
Assisted by the dietician, parents were able to reaffirm to their children the importance of drinking water.
Fun slogans made water the superhero of this action.

During the second workshop, entitled "À quoi tu jouais, si tu n'avais pas de jeu vidéo ?", parents were asked to present to their children games that they had played as youngsters.
Mothers taught their daughters the rules of hopscotch and songs that accompanied jump rope.
Other games took place during the workshop like board games, etc...
Using their own childhood experiences, parents became actors in the promotion of physical activity with their own children.

Closing exhibition

To enable parents to explore all of the activities their children had carried out during the EPHE action, the CCFL Health Service helped the children create a closing exhibition about everything that had been worked on.
This event allowed the children to present to their parents the full spectrum of work that they had accomplished, and also to reaffirm to them of the important lesson of health promotion.

5. Remarkable activities

EPHE challenges

Challenges were implemented to unite the children around health promotion messages and to enable educational teams to build on the advocacy work conducted by the EPODE team's actions.

During the 15 days in between the different actions with the children, the teachers created several challenges that were in line with the themes on raising awareness.

Fruits and vegetables

- Health objective: Create curiosity amongst the children about the discovery of new fruits.
- Challenge objective: Create the largest fruit basket!

Fruit Basket Poster Challenge – Everyday, children would choose a letter from the alphabet and the next day, they would bring an image of a fruit beginning with that letter to be glued onto the basket poster.

Water

- Health objective: Teach children to drink water throughout the day.
- Challenge objective: Collect the maximum number of lids from water bottles!

Water Bottle Lid Poster Challenge - Every day, each child received a bottle of water (50 cl). At the end of the day, if the child had drank the entire bottle, he/she could glue the lid onto the the water bottle poster.

Physical Activity

- Health objective: Be aware of the amount of time devoted to physical activity.
- Challenge objective: Collect the greatest number of stickers on the physical activity stopwatch!

Physical Activity Poster Challenge -Every evening, the children reported on their agendas the physical activities in which they participated outside of school. The following day, they would glue thumbnails, corresponding to the number of physical activities they did, onto the poster.

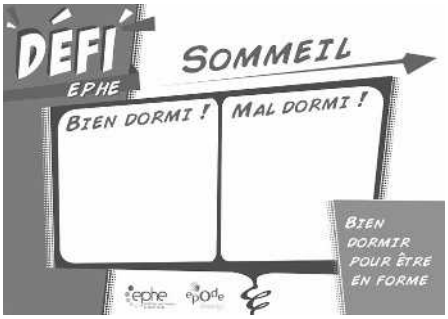
Sleep

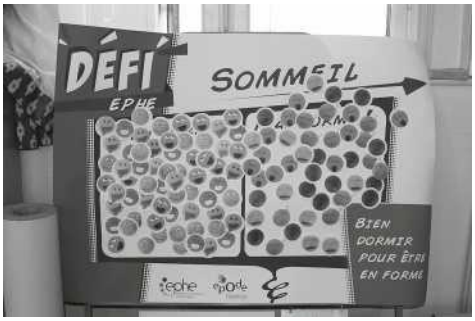
- Health objective: Improve conditions to sleep well.
- Challenge objective: Collect the maximum number of smileys "I slept well!".

Every day, children glued the smiley "I slept well!" or "I slept badly!" to the Sleep Well Poster Challenge. When a child indicated that he or she had slept badly, the teacher asked the child to explain why, and reminded him/her of the optimal conditions to promote a good night's sleep.

The implementation of these challenges over 15 days between actions helped unite all stakeholders in the field involved in the EPHE project in France. The CTFL Health Service, the teaching staff, the parents and the children all contributed to the success of these actions.

The challenges helped enable teachers to relay the message of health promotion consistently and on a regular basis. Thanks to this EPHE project, the children have benefited from more time learning about health promotion then they would have from simply the Health Service actions alone.
The enthusiasm with which both the professionals and families participated in these challenges reflects the impact with respect to the dissemination of the health promotion message.





Chapter 6

Healthy Kids, Bulgaria

Elina Golemanova, Teodora Handjieva-Darlenska, Svetoslav Handjiev

Healthy kids Bulgaria website: apraagency.com

1. Healthy Kids programme overview

In 2012, the Healthy Kids in Bulgaria programme was developed, in order to combine the efforts of public, private and community partners to help prevent childhood obesity in the country.

The primary goal of the programme was to make balanced nutrition and physical activities accessible and fun for Bulgarian families and primary school students by showing how fun a healthy lifestyle could be. Through the use of various interaction methods specifically created to match the characteristics and needs of each target group, the programme aims to inspire and initiate healthier behaviour based on informed choices, balanced nutrition, daily physical activity and family and community initiatives.

The coordination team developed a strategic plan for an educational program, supported by various in-school and after-school activities, in order to educate children between 7 and 13 years old on how to make their own daily food choices and to promote an active lifestyle amongst families. The aim was to raise awareness and

engage school communities, professionals, celebrities, parents and teachers to be active participants in the discussion on the health risks of overweight and obesity amongst children. Healthy Kids in Bulgaria aimed to motivate people to consider and implement a change in their daily nutrition and physical movement choices. Interactive activities in each stage of the programme were designed to change children's nutrition and physical habits and teach them to be proactive in their selection of healthy food and ways to exercise.

Settings

The Healthy Kids in Bulgaria activities were tailored to the needs of each community. Outdoor settings included the schools' surroundings and playgrounds and public areas such as parks and city squares. Indoor activities were held in the schools' classrooms, sport halls, conference rooms and other public indoor areas. The combination of outdoor and indoor activities allowed a maximum utilisation of each venue and ensured a fun educational environment for the participants, suitable for each part of the program.

In order to assure the activities' success and influence, BASORD (the Bulgarian Association for the Study of Obesity and Related Disease) has conducted a two-day training of selected students, which were chosen to be Healthy Kids organisers in Bulgaria. During the 2012-2013 academic year, the programme's organisers held a number of fun and interactive lessons with games and competitions at school and outdoors. The use of diverse and interactive trainings and games engaged children and sparked their interest in a balanced diet and sports.

Participants

After the pilot year of implementation, Healthy Kids in Bulgaria widened its range to include another region in the programme. By the end 2014, 20 schools took part in the activities and over 8,500 families were directly involved in the interventions.

Methodology

Healthy Kids in Bulgaria was implemented in periods, in accordance with the schools' schedule. Each period was divided in stages, implemented once a year for the overall period of 5 consecutive years. The methodology was developed to ensure the continuity of activities and proper evaluation with result measurement. At the beginning and at the end of each period the results are measured and progress reports are done.

- *Introduction:* The programme is introduced to the school community, teachers and parents, and their agreement for children to be involved is requested;
- *Research and plan development:* The children's BMI and nutritional knowledge are measured. A nutritional and educational plan is developed, in accordance with the government guidelines and the specific needs of the school;
- *Communication and development:* The programme is communicated to the media and general public by means of public relations and social marketing activities;

- *Distribution of basic information:* Basic nutritional information is distributed to the participants. The informational materials are developed according to each target group's specific characteristics and informational needs;
- *Implementation of the activities:* Distribution of informational materials for children, professionals, teachers and parents; school branding and sports facilities renovation, organization of nutritional and cooking classes, organization of regular parents-teachers meetings and discussions, organization of physical activities opportunities and games for the children, open-air family days, etc.
- *Results measurement:* Parents, teachers and children's knowledge and understanding of the information distributed, lessons learned, lifestyle change.

Target Groups

The predominant primary target group was primary school children of ages 7 to 13, along with their parents, and the teachers. Most of the targeted children and their parents come from middle class families with average income. They live in a respective area (region) in capital that contains both low and high socio-economic backgrounds. This target group focuses on children who study at public primary schools, including kids with disabilities that are in the same school classes. The parents come from various educational backgrounds and have high influence on the family decisions and lifestyle choices.

The project was also directed towards people working in local authority offices, doctors and university students with the aim to attract their attention to the benefits of a healthy lifestyle and the need for action. Neighbours and friends of families and professionals that participate in the programme are also involved via Healthy Kids in Bulgaria. Media representatives play a significant role in the behavioural change and healthy lifestyle perception. Their attention and reflection on the problems of obesity are essential in the process of addressing the issue to help achieve recognition and further growth.

The efforts were concentrated in the city of Sofia to ensure project sustainability, and to focus on achieving the objectives and desired results, local authorities and NGOs were actively involved in the activities plan development. The beginning of the programme was funded by a private partner –the biggest food and beverage company in Bulgaria and a leader in nutrition, health and wellness– Nestlé Bulgaria.

In 2012, Healthy Kids in Bulgaria was launched at 10 schools in the capital. In less than a year, the programme attracted more than 3,500 families with children between the ages of 7 and 13 from two districts in Sofia –Triaditsa and Studentski. Events and activities targeted families, school stakeholders and the society through the involvement of private and public partners. Today, 8,500 families participate in the programme that is held in 20 schools in Sofia.

Central level

Healthy Kids in Bulgaria was developed by APRA Porter Novelli Group in partnership with BASORD. The programme is funded by Nestlé Bulgaria, which allowed the sustainability of the project in the challenging economic conditions of the country.

The central coordination team is led by Elina Golemanova, Account Manager at APRA Porter Novelli Group, and Professor Svetoslav Handjiev, Chairman of BASORD.

The central coordination team is dedicated to the development of the strategic planning of the programme's activities and their implementation phases. The team maintains relations with all project partners and stakeholders and coordinates the work of each local team member.

Local level

The role of the local team is to implement the specific actions in the schools of each region. The members of the local team also include famous sportsmen who are loved by the public –volleyball players Evgeni Ivanov-Pushkata and Svetlozar Ivanov. The local team members keep regular contact with the school staff and the local stakeholders and also work on the field together with Healthy Kids in Bulgaria organisers.

Scientific level

Because Healthy Kids in Bulgaria is developed in collaboration with BASORD, the Association is the main scientific body of the program. As the most authoritative association in the area, BASORD promotes healthy nutrition, informs the general public including disadvantaged populations about the problems of adult and childhood obesity and has created a network of nutrition and obesity specialists targeting health inequalities. BASORD collaborates with IASO for the organisation of SCOPE courses in Bulgaria and is a partner of EU projects such as DiOGenes and DIETS.

Partners and collaborations

The programme action plans were developed with BASORD and received the support of local authorities and stakeholders:

- Three national ministries:
- The Ministry of Education and Science;
- The Ministry of Physical Education and Sports;
- The Ministry of Healthcare.

In addition, the programme has had the full support of the local municipalities throughout the years. Organizations that took part in the project throughout the years include:

- Sofia Municipality;
- The Municipality of Triaditsa region;
- The Municipality of Studentski region;
- The Municipality of Lyulin region;
- The Bulgarian Gymnastics Federation – member of the European Gymnastics Federation;
- The Bulgarian Athletics Federation;
- Euro-Toques Bulgaria;

- The Association of the medical students in Bulgaria;
- Celebrity sportsmen.

In addition to the public and private organizations mentioned above, several types of stakeholders were involved in the programme.

2. Social Marketing Activities

Each year, the central coordination team develops an integrated communication plan, which is implemented by each local coordinator, responsible for the schools in the respective region.

The central team conducts a kick-off meeting with partners, local authorities, school directors and local coordinators, in order to present the school's strategy for the upcoming year.

Once the project plan is shared with all the stakeholders, the local coordinators will hold field meetings, develop the actions' schedules, and distribute the organisers' roles and engagements. They are also responsible for the informational campaign in the schools, such as:

- Official Letters to school stakeholders and parents;
- Regular meetings with teachers and school directors;
- Personal contacts and programme presentations to the parents held by famous Bulgarian sportsmen;
- Declarations for participation, which each of the parents sign, in order to give permission for participation in the programme.

followed by:

- In-class balanced nutrition lessons for all children, explaining the basics of balanced nutrition, the nutritional pyramid, fruits and vegetables consumption;
- In-class balanced nutrition games and activities for all children, giving practical knowledge and engaging children;
- Healthy Cooking Classes in school, teaching all children how to prepare a balanced sandwich for school;
- Open Sports lessons by celebrity sportsmen and sports tournaments at schools;
- Fast, Brave, Skilled and Healthy celebrations for all children in the school yard, which participate in cooking and relay races;
- Picnic in the mountains for all school stakeholders, etc.

The interactive balanced nutrition lessons and games were supplemented by healthy cooking classes where children prepared a balanced school menu. Celebrity chefs visited each of the schools and organised games and practical lessons to teach students how to prepare a balanced school lunch.

As part of the programme and in partnership with the Bulgarian Athletics Federation, Healthy Kids in Bulgaria became a part of the international project IAAF Kids Athletics

and all schools in the programme were involved in athletics trainings and competitions for both teachers and children. Over 100 children and teachers in each school took part in athletics games and competitions for one day. The chairman of the Bulgarian Athletics Federation Dobromir Karamarinov visited some of the schools and awarded prizes and certificates to the participants.

Besides the school-based activities, numerous public events for the whole family are organised, in order to reach the local communities. Public and private partners take part in the activities; and media are invited to visit each of the events. The celebrity endorsement is very valuable, as well. Children are influenced by famous role models who help them understand the importance of active lifestyle and balanced nutrition.

3. EPHE Community

Triaditsa Municipality is a district located in the central part of Sofia. As of 2006, its population is about 65,000 people. The district has an area of 9,8 km^2. It includes three neighbourhoods of the capital: Ivan Vazov, Strelbishte and Gotse Delchev.

Moreover, the inhabitants have a range of lower to high income, the unemployment in Triaditsa is only 3.7% which is more than two times less than the national average. There are no manufacturing plants within the district so the economy relies on services, trade, finance, tourism and administration. The infrastructure is currently under development.

In 2012, the programme Healthy Kids in Bulgaria became part of the EPHE Project. Ten schools from 2 local communities within the capital of Sofia were chosen.

The selected schools include areas with varying socio-economic backgrounds. 7 of the schools are located in Triaditsa Region, 2 schools cover the whole Studentski Region and 1 private school was also involved. This approach allowed us to monitor the differences in the behaviours of each target group, as well as to examine the efficiency of the implanted actions within a variety of families.

There are 12 schools and 10 kindergartens in the region and 7 of the schools are monitored by the EPHE project. Many important medical facilities are located there including the Medical-Military Academy, the Hygiene Centre, the Dental Institute, the Children Paediatrics; the hospitals Alexandrovska, Prof. Ivan Kirov, Sv. Ekaterina, Maichin Dom and Sv. Sofia. There are three polyclinics as well.

The average age within the community is between 15 and 64 years old and refers to 64% of the Triaditsa population. The region has one big sports hall and a stadium, but they are mostly used for activities organised by private entities or for institutional public events.

Healthy Kids in Bulgaria receives a very strong support from the Triaditsa Municipality team. The Municipality Director for Sports and Culture and the Deputy Major are amongst the programme founders. They played a significant role in the launch of Healthy Kids and thanks to their efforts, the programme was able to cover almost

all schools in the region. Thus they are very motivated to implement all EPHE actions and activities. Furthermore, the EPHE project gives added value to the region with the scientific data and the research results developed within the project frame.

Studentski Municipality is one of the most diversified areas in Sofia. It includes three neighbourhoods of the capital: Studentski Grad, Durvenitsa and Musagenitsa. The district is located in the southern part of Sofia. The population is 71,961 inhabitants with lower to middle income. Average age within the community is between 15 and 64 years old, which refers to 86.1% of the population. It is unlike most campus areas in Western Europe and Northern America. Studentski is a common living place for most of the students of Sofia's numerous universities. This helps students from different higher education institutions meet and interact, but on the other hand causes major transportation issues as the bulk of Sofia's university faculties are situated relatively far from the city centre and public transport is often unable to cope with Studentski Grad's needs. The traffic is frequently congested especially during rush hour – mornings and late afternoons.

2011 marked the set-up of the largest skate park on the Balkans situated within the park area in front of the University of National and World Economy. Two multifunctional halls, Hristo Botev and the Winter Palace of Sports, host a number of events regularly. Because of the cheap rent, less than €20 per month, it is a very attractive place to live.

Studentski grad hosts the National Sports Academy in Bulgaria and the local authorities are very open to actions, directed to active lifestyle and physical activity. Nevertheless, Studentski Minucipality has 3 sports fields, 1 sports hall, 3kms of cycle tracks and 10 sports clubs.

Within these two communities the Healthy Kids Project targeted 200 families in 10 schools: 3 self-contained elementary schools with about 700 students in each school; 6 elementary schools, combined with a high school in one building with about 1,000 students in each and 1 private school with about 500 students:

- *9 of them public:*
- 20 OU[1] Todor Minkov;
- 41 OU Patriarh Evtimii;
- 47 SOU[2] Hristo Danov;
- 73 SOU Vladislav Gramatic;
- 104 OU Zahari Stoyanov;
- 121 SOU Georgi Izmirliev;
- 126 OU Petko Todorov;
- 8 SOU Vasil Levski;
- 55 SOU Petko Karavelov
- *1 private school:*
- School St. George

1. *OU (**ОУ - основно училище**) - primary school (duration: 8 years, age of students 7-14).*
2. *SOU (**СОУ - средно общо-образователно училище**) - secondary school (duration: 12 years, age of students 7-19).*

25 families from each school were monitored for a period of 3 years with the EPHE project and all of them will continue to participate in the programme after the project ends.

4. Interventions Undertaken

4.1. Preparation Step-End of 2012 to June 2013

Within the first year of the project, the focus was on preparing the community for the project implementation and to further gain support from the local partners. A motivation and awareness campaign was developed, in order to motivate families to get involved and take part in implementing the first evaluation phase.

Official letters were sent to national and local authorities (Ministry of Health, Ministry of Education and Science, local mayors) and a meeting with the Ministry of Education, Youth and Science was organised. During the meeting, the EPHE project was presented and the Municipality was officially invited to support EPHE actions. Having the support of the Ministry, an official invitation letter from the Ministry was sent to all school directors so that they felt very comfortable with EPHE implementation.

In order to raise awareness on the project in Bulgaria, BASORD organised a press conference to commemorate World Obesity Day. The press conference was followed by free check-ups for weight, fat mass and cardiovascular risks from October 30th to November 3rd at the NPC in Sofia and a scientific conference on the developments in the fight against obesity was held on the same day.

Once the schools were involved, the focus was put on the families' motivation, in order to ensure a high participation rate and dedication of the parents and teachers. The main motivation for most of the families was the healthy camp "School for Health – For children, parents and teachers", organised by BASORD in one of the most famous seaside resorts of Bulgaria. A lottery was organised for all the families and teachers who participated in the project and 5 families and a teacher from each school were drawn at random to take part in the camp. They spent a healthy week at the seaside with a professionally developed schedule, including balanced nutrition classes, entertaining sports activities and sports games for the whole family, and personal nutritional consultations by Professor Svetoslav Handjiev and his team. This approach led to 94% participation rate within the data collection of the baseline evaluation and to the empowerment of EPHE.

4.2. The Intervention Step: September 2013 to June 2014

After examining the baseline results, a detailed action plan was developed for the second year. The results showed low fruit and vegetables consumption, high soft drinks consumption and long screen exposure amongst Bulgarian children. The actions were

designed to address the price influence, the habitual intake and home availability of fruit and vegetables, as well as the parenting practices such as nagging behaviour.

Each school had a dedicated intervention plan and it was implemented within the second evaluation period. As the first "School for Health" began in September 2013, this was the best occasion to start the intervention and to turn 130 parents, children and teachers into active lifestyle and balanced nutrition ambassadors. Within the camp frame, personal anthropometric measurement and professional consultations on the healthy lifestyle and the specific health problems were held. Each family had the opportunity to ask specific questions, based on the measurement results. Specific health concerns were discussed. The EPHE families and teachers spent a week on the seaside with a balanced menu and a fixed daily programme. Morning gymnastics, fixed sleep and rest time and balanced nutritional menu were also a part of the programme. Besides the four main pillars of EPHE intervention, the nutritional approach was based on two more important dietary elements for the Bulgarian children: the consumption of milk and dairy products (which is the lowest in EU amongst children), and the traditions in the healthy and balanced diet (the so-called Balkan diet).

While parents had lectures, children painted their favourite fruits and vegetables with a smiley face and food they don't like with a frowny face. The organisers explained why all fruits and vegetables are good for health and how they can be prepared, in order to be tastier for the children. Family games and beach sports activities were organised every day.

At the end of camp, there was an official closing ceremony. The Minister of Education and Science awarded special certificates to all participants in the School for Health initiative. National and local media representatives were invited to cover the event and the EPHE project received publicity.

Dances during "School for Health – For children, parents and teachers"

"School for Health – For children, parents and teachers"

"School for Health – For children, parents and teachers" initiative was presented at different scientific congresses (International symposium on obesity and related diseases, Albena 2014; Scientific Forum of MOCA, Bucharest 2014; National Congress on Nutrition, Varna 2015; and European Congress on Obesity, Prague 2015). "School for Health – For children, parents and teachers" gained much attention from other countries such as Romania, where school-aged children expressed their wish to take part in it.

Within the school year, all children took part in in-class activities:

- Balanced nutrition classes and games, based on fruit and beverage consumption and the nutritional pyramid;
- Healthy cooking activities and participation in the European Day for Healthy Food and Cooking with Children;
- Some of the famous sportsmen in Bulgaria, Olympic gold medallists and World Champions, visited the schools and held open lessons for the children;
- Each school had a sports celebration and organized kids' athletic tournaments in the school yard;
- Lessons on water consumption and sleep importance were held by the programme organisers and the children developed their own "Dreams Diaries", which were signed by celebrity sportsmen;
- Water Day with painting exhibition and paintings on the ground was organized, in order to focus on the importance of water consumption. Parents received informational materials on water and children won special certificates, delivered by their favourite animated hero.

4.3. Public events

4.3.1. *Sofia Festival of Science*

In 2012, Healthy Kids activities were organised during the Sofia Festival of Science. In a tent within the festival area, a nutritionist held balanced nutrition presentation

and lessons. Interesting tricks and tips were presented with real practical examples. As a complement of the theory, a celebrity chef demonstrated healthy recipes to parents and children. After the demonstration, there was a fun cooking competition for parents and children.

4.3.2. *European Day for Healthy Food and Cooking with Children*

For 3 consecutive years, Healthy Kids in Bulgaria participated in the European Day for Healthy Food and Cooking with Children, organised by Euro-Toques Bulgaria under the patronage of the European Commission.

Each year, nearly 500 kids aged 7 to 12 from private, public, and specialized schools for disabled children participate in the event. They prepare healthy food together with chefs, popular TV hosts and celebrity sportsmen. The initiative aims to encourage children to pick up and cook a well-balanced menu, and to look for it. All Healthy Kids in Bulgaria children participate in the event, together with the programme partners.

In 2013, three of the Healthy Kids celebrity ambassadors took part in the European Day for Healthy Food and Cooking with Children. They were the deputy-minister of Sports, the most famous Bulgarian gymnast, Yordan Yovchev, the most successful Bulgarian basketball coach and a TV star, Titi Papazov, and the beloved World Champion in volleyball Evgeni Ivanov-Pushkata. They cooked together with children and had numerous TV interviews raising awareness about the event.

In 2014, the festival was opened by the Head of the Representative Office of the European Commission in Bulgaria, the President of Euro-Toques Bulgaria, and Yolanta Delibozova – Yoli, the Bulgarian face of 24KITCHEN. For the first time, the initiative joined in the global idea of Jamie Oliver, Food Revolution Day, which seeks to gather more than a million children to cook to set a Guinness World Record. Jamie Oliver sent his special video lesson to all the participating Bulgarian children, in which he showed how to prepare a "Rainbow salad". The little cooks, together with first class chefs of Euro-Toques Bulgaria, prepared a healthy and balanced menu.

5. Remarkable activities

5.1. World Water Day

The World Water Day celebration, organised in one of the schools, was one of the most remarkable actions in 2014. Over 200 children from first to seventh grade celebrated the World Water Day in 126 primary school Petko Todorov in Triadtisa. Students prepared a special exhibition entitled "Water in Our Lives" to promote the importance of daily water consumption as part of a balanced diet and active lifestyle. One of the most popular young performers and the winner of the first season of the music show X Factor, Raffi Boghossian, was a special guest at the event. Raffi looked at the children's work and talked to them and their parents about the

importance of water consumption for their health, after which he awarded all participants in the exhibition with Healthy Kids in Bulgaria certificates. Parents received materials with valuable information and tips on how to motivate children to drink 8 glasses of water per day, whereas the most active students were honoured by the guest star, with whom they took souvenir pictures. A special guest was Mrs. Silva Avramova Radilova, Deputy Mayor of Triaditsa District in Sofia Municipality as an active project partner.

5.2. Celebrity and officials' endorsement

The main lesson, learned from the project, was the important role that celebrities and officials play in motivating families. Role models have strong influence and we consider them a necessary instrument in the process of change of behaviours. The open sports lessons in the schools were not only appreciated by the children, but sometimes by the teachers and directors too, who were even more excited. The participation of the Minister of Education and Science in the "School for Health" initiative had also a great impact amongst all participants in the project.

And last but not least, the EPHE project gave an additional added value to Healthy Kids in Bulgaria. It let the programme coordinators develop additional skills, share experience with other EPODE member programmes and participate in international meetings of high importance.

Chapter 7

JOGG, the Netherlands

jongeren op gezond gewicht

Ingrid Bakker, Lideke Middelbeek

JOGG website: jongerenopgezondgewicht.nl

1. JOGG programme overview

1.1. Realisation process

The JOGG approach (Jongeren Op Gezond Gewicht; Young People at a Healthy Weight) is a movement in the Netherlands that encourages all people in a city, town or neighbourhood to make healthy food and exercise an easy and attractive lifestyle option for young people (0-19). At national level, the JOGG approach is coordinated by the foundation Jongeren Op Gezond Gewicht based in The Hague.

The approach focuses on children and adolescents, along with their parents and overall environment. The JOGG approach advocates for a local approach in which not just the parents and health professionals, but also shopkeepers, companies, schools and local authorities join hands to ensure that young people remain at a healthy weight. The JOGG approach started in 2010 and is based on the successful French programme EPODE (Ensemble, Prévenons l'Obésité Des Enfants).

At the time of this publication, the JOGG movement consists of 83 municipalities. Each municipality commits to the JOGG approach for a minimum of 3 years. They appoint

a local JOGG coordinator and pay an annual commitment fee. In return, Jongeren Op Gezond Gewicht supports local authorities and their local partners with the implementation of the JOGG approach. One requirement to start with the JOGG approach is that the full council of the municipality adopt the approach and that they embed the JOGG approach in their local policies. Moreover, the local municipalities are expected to continuously monitor and evaluate the effects, activities and process of the JOGG approach.

1.1.1. *The JOGG pillars*

The JOGG approach consists of five pillars: political commitment, co-operation between the public and private sectors, social marketing, scientific support and evaluation, and linking prevention and healthcare. The first four pillars correspond with EPODE's four pillars. The fifth pillar "linking prevention and healthcare" has been added in the Netherlands.

The five critical pillars, which are seen as the conditions for success in the local communities, form the foundations of the JOGG methodology:

Political commitment
Healthy weight, as part of a healthy lifestyle, is an important topic in local politics and must be adopted in relevant policy documents. Mayor and aldermen are familiar with, interested in and actively involved in the JOGG movement.

Co-operation between the public and private sectors
Both public and private entities are closely involved with the JOGG approach. For instance, as part of the local project team they could generate ideas, provide communication resources, or contribute financially to the activities of the approach.

Social marketing
The essence of social marketing is to getting to know your target group. Social marketing applies a « customer oriented » approach in order to create sustainable behaviour change. JOGG municipalities apply the principles of social marketing to their local situation.

Scientific support and evaluation
The JOGG approach will be monitored and evaluated both in terms of process and outcome. JOGG municipalities use the most effective interventions and will measure the effects. The process will be evaluated and adjusted if necessary. BMI, health behaviour and the healthy environment of young people in JOGG communities will be monitored.

Linking prevention and healthcare
In Dutch JOGG towns, care professionals identify overweight at an early stage. By linking preventive care with healthcare structures, young people will receive the support they need.

1.1.2. *Ambition*

The overall ambition of the JOGG approach is to work towards a society that offers all young people the chance to live, learn, recreate and work in an environment in which a healthy lifestyle is the common practice.

1.1.3. *Aims*

With the JOGG approach, municipalities aim to reverse the increasing trend of young people (0-19) with overweight/obesity. Municipalities are encouraged to use the following sub-aims:

- Increase the amount of young people that achieve the recommended level of daily physical activity;
- Reduce the intake of sugary drinks and increase the water intake;
- Increase the amount of young people that consume a healthy breakfast;
- Increase the daily intake of fruit and vegetables;
- Ensure that every setting (neighbourhood, school, home, healthcare) offers healthy options and promotes physical activity.

Target group, settings and reach

The JOGG-approach focuses on young people aged 0 to 19 years old and their social and physical environment (e.g. parents and school). The JOGG approach stipulates the importance of addressing multiple settings in order to promote a healthy environment in which young people and adults live and work, like school, the neighbourhood, the sports club and work place.

Jongeren Op Gezond Gewicht has started with the local dissemination of the approach in 2010 in Zwolle. At the time of this publication, 83 municipalities in the Netherlands are using the JOGG approach. This number of municipalities is expected to increase over the coming years. Within most JOGG municipalities, the programme specifically focuses on the neighbourhoods that experience the greatest challenges in terms of socioeconomic and health status.

1.2. Organisation

1.2.1. *Organisation at national level*

Besides the JOGG approach, Jongeren Op Gezond Gewicht also carries out the following programmes and national campaigns:

- Healthy Environment (including healthy canteens at schools, sports and work, healthy school approach, healthy work), and;
- Theme campaigns such as "DrinkWater" (water drinking) and "Gratis Bewegen" (moving and playing for free).

Regarding the JOGG approach, the main aim of the foundation is to support the local implementation of the programme. This support consists of tailored advice and coaching. The foundation also offers a broad selection of tools, templates and materials that can be used locally.

For the years 2015 to 2020, the foundation has defined the following goals:

- Working on a healthy environment with structural attention to a healthy lifestyle and a healthy weight, reaching at least 1 million children and young people;
- Getting to similar results as the 75 JOGG municipalities that illustrated a measurable increase in the number of children with a healthy weight.

Currently Jongeren Op Gezond Gewicht consist of 22 staff members and has 6 board members. Former Dutch politician Paul Rosenmöller chairs the foundation. The Dutch Prince Pieter-Christiaan van Oranje and one of the candidates of the 2011 So You Think You Can Dance contest, Juvat Westendorp are the national ambassadors of Jongeren Op Gezond Gewicht.

Designing a healthier environment for the young generation is not something that Jongeren Op Gezond Gewicht does alone. Both at national and local level Jongeren Op Gezond Gewicht works together with partners from both the public and private sector.

Partners at national level

At national level, the following partners have committed themselves to the ambition of Jongeren op Gezond Gewicht:

Public and social partners

Zorgverzekeraars Nederland (ZN)(Association of all Dutch healthcare insurers)

- Nederlandse Hartstichting (Dutch Heart Foundation);
- Nederlandse Vereniging van Diëtisten (Dutch Association of Dieticians);
- NOC*NSF (Netherlands Olympic Committee*Netherlands Sport Federation);
- Koninklijke Vereniging voor Lichamelijke Opvoeding (KVLO)(Royal Association for Physical Education);

- Vereniging van drinkwaterbedrijven in Nederland (Vewin)(Association of all drinking water companies in the Netherlands; 10 companies);
- Centraal Bureau Levensmiddelenhandel (CBL)(Branch association for supermarkets and food services in the Netherlands; 26 companies);
- Federatie Nederlandse Levensmiddelen Industrie (FNLI)(Federation of the Dutch Food Industry; 450 companies and 9 branch organisations) (Vereniging Nederlandse) Cateringorganisaties (Veneca)(Association of Dutch Catering Organisations; 9 members);
- PO-raad (Dutch Counsil for Primary Education);
- VO-raad (Dutch Counsil for Secondary Education);
- MBO-raad (Dutch Counsil for Intermediate Vocational Education).

(updated information can be found at: https://jongerenopgezondgewicht.nl/partners)

Private partners

National private partners support the JOGG movement by:

- Improving the marketing expertise of JOGG by contributing to marketing and communication of the JOGG message and supporting the design and implementation of the social marketing training for JOGG municipalities;
- For this, a marketing group with 5 of the 6 national private partners was installed.
- Helping involve new JOGG municipalities located in national partners' cities;
- Communicating about JOGG and overweight through its own communication channels;
- Financially supporting the national JOGG budget;
- Supporting one or more local JOGG municipalities in their activities, knowledge, communication, and so forth;
- Albert Heijn (leading food retailer in the Netherlands with over 930 stores) Supermarkets, convenience stores, and online shopping and delivery for food and non-food; also in Belgium and Germany);
- Albron (food service organisation with more than 1,000 locations in companies, governments, hospitals, nursing homes, leisure and eduction);
- Zilveren Kruis Achmea (health care insurance company with over 3.5 million members)
- FrieslandCampina (Royal FrieslandCampina is one of the world's five largest dairy companies, has offices in 28 countries and sels products in more than 100 countries);
- Nutricia (brand of Danone for baby and child nutrition);
- Unilever (worldwide leading company in fast-moving consumer good, selling over 400 brands in more than 190 countries).

Knowledge partners

- Voedingscentrum (the Dutch authority that offers consumers scienfic and independent information about a healthy, safe and more sustainable nutritional option);

- RIVM/Centrum Gezond Leven (Dutch National Institute for Public Health and the Enviroment that improves public health and a clean and safe environment);
- Nederlands Instituut voor Sport en Bewegen (NISB).

Other involved knowledge institutes are CBS (Statistics Netherlands[1]), TNO[2] and the Mulier Institute[3].

Scientific partners

Since the beginning, Jongeren Op Gezond Gewicht has worked together with the VU University Amsterdam and the Windesheim University of Applied Sciences in Zwolle on the monitoring and evaluation of the foundation and on the successful implementation of the pillar Scientific Support and Evaluation.

At the time of writing, Young People at a Healthy Weight is installing a scientific guidance group with representatives from policy, education and practice. This group will advise the foundation on how to optimize the national and local evaluations. Het Mulier Instituut (the Centre for Research on Sport in Society) and RIVM (Dutch National Institute for Public Health and the Environment) are carrying out the evaluation of the foundation's main objectives and programme targets.

Other scientific partners are joint in the Consortium Integrated Approach Overweight (CIAO) network: a consorted action of five major local collaborations in the Netherlands between academic institutions, community health services, local authorities and other relevant sectors (academic collaborations). The aim of the consortium is to provide elements of a coherent integrated multi-sectoral approach towards obesity prevention based on the principles of the EPODE programme[4].

Financial support

The foundation is financed by the Ministry of Health, Welfare and Sport (VWS), with some additional financial support from the six national private partners (each €50,000[5]). In addition, the foundation receives a fee from each JOGG municipality

1. Statistics Netherlands is responsible for collecting and processing data in order to publish statistics to be used in practice, by policymakers and for scientific research. In addition to its responsibility for (official) national statistics, Statistics Netherlands also has the task of producing European (community) statistics. More information: http://www.cbs.nl/en-GB/menu/organisatie/default.htm.
2. TNO was founded by law in 1932 to enable business and government to apply knowledge. As an organisation regulated by public law, TNO is independent from any government, university or company. TNO connects people and knowledge to create innovations that boost the sustainable competitive strength of industry and well-being of society. More information: https://www.tno.nl/en/about-tno/.
3. The Mulier Institute is a Centre for Research on Sports in Society, in which Dutch sport researchers and sports scientists have joined forces. More information: http://www.mulierinstituut.nl/english.html.
4. More information on the CIAO network can be found at http://www.ciao-onderzoek.nl/what_is_ciao/.
5. Currently under negotiation for the upcoming period (2015-2020).
More information can be found at http://www.voedingscentrum.nl/interactief-theater, including a promo film (https://www.youtube.com/watch?v=mHffQECVdAI; in Dutch).
(https://www.youtube.com/watch?v=Zhgu9dXqYj4).

(€5,000 per year for municipalities with less than 50,000 inhabitants and €10,000 for the bigger municipalities).

The steering group is informed yearly about the financial situation. Governmental funding is based on the financial report outlined by the ministerial law and regulations.

1.2.2. *Organisation at local level*

The local organisation structure varies across JOGG municipalities, however most local structures include a steering group, a project group and various groups working on the JOGG-pillars. The local JOGG coordinator supervises the local organisation and collaborates with all relevant public and private partners at both community and municipality level. A local action plan forms the foundation for the local JOGG organisation.

Jongeren Op Gezond Gewicht offers support by giving advice and coaching and through knowledge sharing and best practices from other municipalities.

Partners at local level

The JOGG approach is a community-based programme. Creating change in a community is not something that the JOGG coordinator can do alone. It is therefore essential that relevant public and private partners are brought together in the local JOGG-network.

Most local JOGG-organisations involve several public and social partners like the municipality, the regional of municipal health services, health care institutes, welfare services, the education sector, and sports services.

JOGG municipalities also work with private partners such as food retailers, banks, housing, water, and sport companies. Private partners can contribute to the local JOGG approach in various ways. They can for example provide staff, make a financial or in-kind contribution, or offer their knowledge and communication channels.

Examples of local involvement in Zwolle:

- Abbott – this global healthcare company with its Laboratories division located in Zwolle contributes exclusively financially. The money is used for innovative activities to improve the approach in linking prevention and health care (the 5th pillar of the JOGG approach).
- Albert Heijn – this food retailer which is also a national private partner contributes to the JOGG approach in Zwolle by offering a variety of interventions that they developed.
- DeltaWonen, Rabobank IJsseldelta and Novon – the housing company, bank and cleaning company support the improvement of the physical environment of the two JOGG neighbourhoods. In both neighbourhoods they, together with other partners, put effort and financially contribute in order to realise an interactive Sutu wall (with or without a Sutu Court).
- Novon – a little bus of this cleaning company is used for the transportation of all equipment during the measurement of all 10,000 primary school children in Zwolle, within two months for monitoring.

- Zilveren Kruis - one of the divisions of the health insurer is located in Zwolle. Zilveren Kruis has financed the implementation of the Ik Lekker Fit!? (I Am Fit!) programme at 20 primary schools in Zwolle.

All of the mentioned partners have contributed by thinking along during local PPP-meetings in Zwolle.

1.3. Results

At local level, all JOGG municipalities monitor their efforts in terms of process and effects. The national JOGG team supports the municipalities with the monitoring and evaluation of the approach and disseminates local results. Mentioned below is a selection of results of the JOGG approach:

- The JOGG movement consists of 83 municipalities (July 2015);
- 10 JOGG municipalities continue their JOGG approach after the first 3-year period of cooperation;
- JOGG municipalities Zwolle, Utrecht, Rotterdam, Dordrecht en Amsterdam are the first municipalities who have shown results for the JOGG approach in the JOGG communities:
  - Zwolle: between 2009 and 2012, the percentage of primary school children with overweight in Zwolle has decreased from 12.1% to 10.6%.
  - Utrecht: in the period 2010-2014, the percentage of primary school children with overweight in the JOGG neighbourhoods has decreased from 25% to 22%.
  - Dordrecht: overweight amongst primary school children has decreased of 20% since the start of the programme.
  - Amsterdam: between 2011 and 2013, the percentage of primary school children with overweight at two JOGG schools in Nieuw West has decreased from 41.5% to 37.4%.
  - Rotterdam: the percentage of primary school children with overweight has decreased from 28.7% to 26.3%.
- More than 60 JOGG municipalities started with the thematic approach "Drink-Water". A monitor at two primary schools in Rotterdam showed a 100 ml decrease in the intake of sugary drinks.
- All JOGG municipalities have the online toolkit and inspiration kit of the thematic approach Moving and Playing for Free at their disposal. Twenty municipalities have started with the implementation of this thematic approach. In October 2014, a commercial about this thematic approach was launched on national television.
- Beside the 5 national private partners, more than 120 partners (April 2014) are locally active. These are partners from the nutritional, sports, water, societal, financial and educational sectors.
- In the context of the 5th pillar of the JOGG approach (connecting prevention and health care), 8 JOGG municipalities started with the new lifestyle programme Lifestyle Energy Fun & Friends (LEFF), based on the MEND programme.

2. Social Marketing Activities

2.1. Introduction

Social marketing is a strategy that can be used to create sustainable behaviour change. It takes a consumer-centred approach and uses commercial marketing concepts and techniques to obtain positive societal or social changes (French & Blair-Stevens, 2010). At national level the concept of social marketing is used to develop thematic approaches. Locally, social marketing is one of the 5 pillars of the JOGG approach and is used to ensure that the local activities meet the needs of the target group.

2.2. Thematic approach

Approximately every year, Jongeren Op Gezond Gewicht develops one thematic approach. The essence of the thematic approach is to develop and create a healthy lifestyle for all local stakeholders. All local JOGG professionals work with the chosen theme for at least one year. This process is the first step in the social marketing approach. The second step is to decide how the activities linked to such a theme can be directed at a specific target group in a way that they achieve success.

The thematic approaches aim at:

- Awareness and behaviour change amongst children and young people and;
- Supporting mutual involvement amongst the "co-creators": local JOGG programme managers, school board, management of sports clubs and management of day-care centres.

Three thematic approaches
In 2013, Jongeren Op Gezond Gewicht launched DrinkWater and in 2014, Moving and Playing for Free (Gratis Bewegen). In 2016, the theme Fruit and Vegetables will be launched as a national approach.

2.3. Launched themes

DrinkWater
It is known that drinking water helps against weight gain. Water is available and easy to access everywhere in the Netherlands. Jongeren Op Gezond Gewicht wants to make drinking water easy and attractive for JOGG communities. For the DrinkWater campaign an appealing concept has been designed that meets the needs of the JOGG professionals and end-users.
Since 2013 over 60 JOGG municipalities use the DrinkWater approach and pay attention to the promotion of drinking water. The attention is directed at young people

aged 0-19 years old and their parents. The core message of the campaign is that drinking water is easy and should be the first option when you are thirsty.
Every municipality decides, together with local partners like schools and sports clubs, how the "DrinkWater" approach is carried out. The national JOGG team supports the local implementation by providing advice, materials and tools, such as water bottles, leaflets, posters and evaluation questionnaires. JOGG municipalities share their best practices with each other as well.

Source: Dineke Versluis

In 2014, the new (second) thematic approach called "Gratis Bewegen" was launched.
Through this campaign, Jongeren Op Gezond Gewicht initiated a movement to increase physical activity amongst young children. The JOGG foundation and JOGG municipalities inspire parents, care providers, and their children to start with Gratis Bewegen. Gratis Bewegen raised awareness on physical activity and sport in daily situations: e.g. taking the stairs, cycling to school, climbing or playing soccer at a public park.
With this campaign, Jongeren Op Gezond Gewicht aims to show children and their parents how easy physical activity and sports can be. In the Netherlands, it is possible to move and play for free; always and everywhere. The positive message "Moving and playing for free, just do it!" recurs in all means of communication.
In 2014, Jongeren Op Gezond Gewicht launched a national TV commercial and Gratis Bewegen song. Children can also follow the campaign on Instagram. With the TV commercial (https://www.youtube.com/watch?v=khuHZymFbQw). Jongeren Op Gezond Gewicht aims to support all JOGG communities in their approach of making physical activity attractive and fun for children.
Jongeren op Gezond Gewicht supports the municipalities with the implementation of the campaign by providing advice, tools and materials, such as posters, an inspiration guide, and evaluation questionnaires.

2.4. Theme under construction

Fruits and Vegetables

The third upcoming thematic approach will be launched in early 2016. For this, Jongeren Op Gezond Gewicht liaises with the new national campaign of the "Groen-tenFruit Huis" (Vegetables & Fruit House).

3. EPHE Community

3.1. Chosen JOGG city

From Zwolle, the Windesheim University of Applied Sciences was -together with the VU University of Amsterdam- strongly involved in the process of implementation of EPODE in the Netherlands.

As a medium sized city with an enthusiastic mayor, Zwolle was thought to be the ideal pilot location for the Dutch JOGG approach in the Netherlands. Therefore, in 2010 Zwolle became the first JOGG municipality, supported by Windesheim University of Applied Sciences. The VU University of Amsterdam, where research was performed on the EPODE model, provided knowledge and guidance about the implementation process.

Since then, a broad network of institutes remains actively involved in the JOGG programme in Zwolle, with dozens of sustained activities per year, including activities associated with the DrinkWater and Gratis Bewegen campaigns of Jongeren Op Gezond Gewicht. The first positive effects were noted during the measurements in 2012.

One of the key successes of the JOGG approach in Zwolle is the strong cooperation between policy, (public and private) practice, education and research. Monitoring and evaluation were of high priority since the beginning.

3.2. City

Zwolle is a medium sized city with about 120,000 inhabitants.

Both the Dutch Law of Public Health and the Dutch Law of Social Support (Wmo) set the legal framework for the Health & Health Care programme in Zwolle. The aims of the relevant policy programmes in Zwolle are:

- The aim of the health policy is to improve or maintain the health of all people living in Zwolle, to improve equal opportunity for health (health equality), to decline health differences and to prevent disease;
- The policy on social support aims to offer the whole community possibilities to participate. With that, Zwolle improves social participation and prevents social isolation.

In 2013, the Health & Health Care total budget was 38 million euros, 10.5% of the total municipality budget.

The EPHE project was one of many (>100) activities and projects running under the umbrella of the JOGG approach in Zwolle, named Zwolle Gezonde Stad ("Zwolle Healthy City"). It is however the only project running in the neighbourhoods Aa-landen and Berkum.

3.3. Community

Two other neighbourhoods were chosen for the EPHE project, because Zwolle is a JOGG city that targets mainly the two most deprived neighbourhoods with the highest percentage of people with a low social economic status (SES) and the highest percentage of children who are overweight or obese.

The neighbourhood Aa-landen with 14,000 inhabitants was chosen because it is one of the most deprived neighbourhoods.

The other neighbourhood, Berkum (around 4,000 inhabitants) was chosen because it contains the lowest percentage of people with a low SES, the highest percentage of people with a high SES and the lowest percentage of children with an unhealthy behaviour and overweight or obesity.

3.4. Target group

In both neighbourhoods, the primary school with the most pupils was approached first for cooperation. Both schools were very willing to participate. The school located in the Aa-landen, OBS de Werkschuit, is a public school with more than 280 pupils, of which 116 were targeted by the EPHE project (grades 4, 5 and 6; aged 7-10) during the school year 2013/2014. The public school located in Berkum, OBS de Campherbeek, has 226 pupils, of which 84 were targeted in grades 4, 5 and 6 during the school year 2013/2014.

Parents were informed by the schools and their communication channels: website, newsletters, mailings and printed letters.

3.5. Local partners involved

Since the EPHE project is one of dozens activities and projects of the JOGG approach in Zwolle, the involvement of local stakeholders is different from those involved at city level.

Windesheim University of Applied Sciences was responsible for the project management. The regional health service, GGD IJsselland, was a member of the project team. Other partners involved in one or more activities or interventions were the school principals, dieticians and employees from SportService Zwolle.

4. Interventions Undertaken

General description of the EPHE actions for each year

4.1. 2012/2013

The first year focused on preparing the community, especially the schools, for the project implementation (e.g. "What do they already do?" and "What do they want to do?"), gaining support from the local potential partners in executing the preferred interventions and actions, and motivating families to get involved and on performing the baseline measurement (parental questionnaires) in June 2013.

4.2. 2013/2014

During the second year, from September 2013 until June 2014 after the baseline measurement, the interventions and activities focused on all four themes. Each theme was initiated with a kick-off event, a little gift for the children, and materials and supportive information for the schools, after which further activities focusing on the theme were undertaken during the rest of the year. All interventions and activities on the topic were offered to both schools.

In September 2013, the project started by analysing the school policies on water during school breaks and class, physical activity during physical education, fruit & vegetables

during school breaks and on healthy treats. The school policies were analysed by the school nurse and the prevention advisor of the regional health service. Both schools received their comments, advice, and examples of good practices.

At the beginning of October 2013, the EPHE project kick-off represented a big event for all 200 children from grades 4, 5 and 6 from both primary schools together at the Zwolle Top Sports Centre. This overall kick-off was combined with the national kick-off of the Children's Books Week, which this year had the topic "Sports & Play; Ready to start". During the kick-off event, all four themes were addressed, but the main focus was on physical activity. In addition to Windesheim University of Applied Sciences and the regional health service GGD IJsselland, Landstede, school for intermediate vocational education, and the Zwolle soccer club PEC Zwolle were involved. The press was also invited and present to communicate on the event.

Programme at a glance

- Simultaneously 5 minutes of rope jumping while blowing a party whistle to set an unofficial record for the Guinness Book of World Records;
- Simultaneous hopscotch jumps (changing legs every 30 seconds) as long as possible until there is a winner.
- Introduction of the school programme by the project leader and 2 players of PEC Zwolle (local sports heroes), explaining the importance of healthy living (all topics were addressed: drinking water, eating fruits and vegetables, quality of sleep and physical activity instead of screen time).
- The dance Ready to start! (Klaar voor de start) was part of the closure of the kick-off event.

During the rest of the school year, physical activity was targeted during several customary and additional activities. For example when the children were using the provided digital counting jumping ropes or the School Break Movement Package containing a manual for the teachers, 30 activity cards with 5 minute classroom movement games for each grade, 7 soccer balls, 7 foam balls, 8 meters long jumping rope, 10 yellow ribbons, 20 checkers, and other items. Or when reading the provided 20 children's books on the topic "Sports & Play".

In November 2013, the focus of the EPHE programme in Zwolle was on fruit and vegetables. Since then, both schools provided fruit and vegetables during the 10 o'clock break for three days and after 20 weeks twice a week to all children at school. Since then, other activities about nutrition were conducted during the rest of the school year by the schools (e.g. taste lessons provided by a dietician, including cooking lessons).

In March 2014, both schools organised a kick-off event with the theme "Water" consisting of a complete programme during one or more DrinkWater week. Since then, the schools kept adhering to the theme's objectives partly due to changes in their policy and to the provided water bottles in the classroom.

In May and June 2014, a newly developed intervention, an interactive theatre, on the final topic of "Sleep" was offered to all children from grades 4, 5 and 6 at both schools. At the same time and at the same place at the Windesheim University of Applied Sciences, an interactive theatre was offered to all children's parents. Due to the outcomes of the baseline results, the interactive theatre focused on setting rules and limits concerning all health topics.

To thank the schools and all children for their participation, each child received a "knapsack" made of a wooden stick and a handkerchief, containing an animal mask, binoculars, a bucket, a flyer with information about animal traces, and other items.

4.3. 2014/2015

During the third year, no additional EPHE interventions at school level were implemented. At neighbourhood level, the professionals of the JOGG movement in Aa-landen, Berkum and the focus neighbourhoods of Zwolle implemented activities and materials linked to the JOGG campaigns DrinkWater and Gratis Bewegen. This has bridged the gap between the EPHE project and the other interventions and activities of the JOGG movement in Zwolle, Zwolle Healthy City.

At city level, the JOGG interventions on health promotion and decreasing health differences amongst children and youngsters continued and expanded to other neighbourhoods, including Aa-landen.

Discussion points:

- Sometimes only one of the two schools was interested in the proposed activity. Therefore the intervention programme was not exactly the same for both schools.
- There has been no involvement of the JOGG programme of Zwolle during the EPHE project in Zwolle. This is different from other EPHE countries.

5. Remarkable activities

5.1. Most successful intervention

The most successful intervention of the EPHE project in Zwolle was the DrinkWater week. Both primary schools were very enthusiastic about this. For them, this was a rather new, but easy to implement and well-facilitated intervention programme. Schools were offered a manual, a day-by-day action plan, all necessary materials (water bottles, stickers, a zinc DrinkWater template (1m^2), and other items), tools for monitoring and evaluation, instructions on performing a water dance for the water song, etc. A local Olympic ice-skating hero (Ronald Mulder) performed the opening of the DrinkWater week. This DrinkWater week also provided press outlets for the schools.

5.2. Most innovative interventions

The most innovative interventions of the EPHE project in Zwolle were the two interactive theatres.

The parental interactive theatre "Before you know, they are BIG" was newly designed, launched nationally in April 2014, cast by actors from a professional theatre group and well equipped with materials and information for the organisation team, schools, and parents. All materials provided included: a promotional film, manuals for the organisation, the schools and the organiser, sheets, materials for recruitment (posters, flyers, personal invitation drawn by the children, etc.), information and newsletters, a comic strip and film to train the organiser.

The children's interactive theatre "Good night Marquis and Marquise!" was especially developed for the EPHE project in Zwolle and used storytelling, acting and singing about more or less sensitive topics concerning the theme "Sleep": bed rituals, nightmares, dealing with fears, bedtime stories, and so forth. The children were indirectly informed about the importance of a good night sleep and how they can sleep well every night. In addition to the song, they also received a nightcap from the Sandman.

5.3. Most successful practice

Our most successful practice or approach accomplished a great deal without spending a lot of money. Existing programs and structures were used to implement the thematic activities often for free or for a reduced price.

Follow Jongeren Op Gezond Gewicht

You can follow Jongeren Op Gezond Gewicht online through the following media:

Twitter: @JOGGNL

Facebook: www.facebook.com/JOGGNL

www.jongerenopgezondgewicht.nl

Chapter 8

MAIA,
Portugal

Marta Sampaio, Naïr Rocha, Maria João Gregório

MAIA facebook: EPHE.Maia.Menu.Saudavel

1. MAIA Programme overview

- City: Maia
- "Maia Menu Saudável" programme has been developed since 2005 and was initiated as a Nutrition Education Project.
- "Maia Menu Saudável" programme has been developed as a community-based initiative, after becoming a part of the Maia School Health Programme. This programme includes projects in the main areas of school health promotion according to Portuguese National Health Policy: nutrition education, food safety, oral health, skin cancer prevention, but also speech therapy, body posture education, and blood donation promotion. "Maia Menu Saudável" is a community-based programme under the responsibility of the Education and Health Division in the Maia city administration.
- This programme covers all the public preschools, kindergartens and primary schools in the municipality of Maia, promoting healthy eating habits and lifestyle to over 7,000 schoolchildren, their families, teachers and the whole school community involved.

- Main objectives: This programme has a particular focus on nutrition education interventions in the school environment as well as the promotion of healthy eating habits and lifestyles, including the acceptance of healthy foods that are commonly rejected by children in school lunches, such as vegetables, fish and fruit.
- Number of beneficiaries: 42 public schools and about 7,000 schoolchildren.
- Organisation of the programme at central and local level:

- the local coordination team:
  - Naïr Rocha (Coordinator of Health Division of Maia Municipality);
  - Marta Sampaio (Nutritionist of Health Division of Maia Municipality);
- scientific support: Faculty of Nutrition and Food Sciences of the University of Porto (FCNAUP);
- public and private partner: Gertal.

2. Social marketing activities

Social marketing strategy for the EPHE project in Portugal

As part of the social marketing campaign, at the beginning of the second year of the EPHE project, creative slogans ("Move more"; "Eat + vegetables"; "Eat + fruit"; "Drink more water"; "Sleep better") were defined for each EPHE theme (fruit and vegetables consumption, sedentary lifestyle, water consumption, and sleep in terms of quality and duration) (Figure 1).

Furthermore, to mobilize the entire community involved in the EPHE project, we used Facebook as the primary communication tool (https://www.facebook.com/EPHE.Maia.Menu.Saudavel). All the activities implemented within the EPHE project were shared on the Facebook page which turned out to be an effective way to establish contact with the families.

Press releases were distributed to the local and national media outlets at various stages of the EPHE project to inform the communities on project events and results.

Figure 1. Creative slogans for a social marketing campaign.

The Maia School Health Programme uses different social marketing tools in order to achieve its main goal of healthy lifestyle promotion amongst school age children. The social marketing strategy of this project includes:

- the project's implementation included in the School Health Programme at the beginning of each school year with the use of various channels: hoarding adver-

tising in Maia Municipality (Figure 2), Facebook page of the Health Division of Maia Municipality and through personal contacts with school coordinators;

- a protocol signature at the beginning of each school year between the Health Division of Maia Municipality and all the schools participating in the different school health projects. All the scientific and private partners are invited to participate in this event;
- an e-book of recommendations for the implementation of each school health project available to teachers and school coordinators;
- dissemination of all activities promoted within the School Health Programme in the Facebook page of the Health Division of Maia Municipality. The most important events are also communicated through social media with press releases.

Figure 2. Hoardings of the School Health Programme.

3. The EPHE community

The city of Maia was chosen to take part in the EPHE project, as it is the municipality with the most experience in implementing strategies to promote the healthy diet of its citizens and a relevant political commitment in the field of health promotion. The municipality, which has an Education and Health Division with a nutritionist, is very dedicated to the development and implementation of a health education programme at the school level.

Maia is a large urban town (135,306 inhabitants in 2011) situated in the north region of Portugal and in the second largest urban area of this country (Porto Metropolitan Area).

Maia Municipality participates in policy decisions in health for the municipality and is also responsible for the educational policy, including health promotion in schools.

The Maia Municipality is responsible for providing school meals in all public preschools, kindergartens and primary schools. A private catering company manages the canteens while all the menus are approved by the nutritionist of the municipality.

- Number of schools/beneficiaries targeted: 2 public primary schools, including 241 children and their families (Gandra School Center – 129 children and Geuifães School Centre – 112 children).
- Local partners involved:

- scientific partners: FCNAUP;
- private partners: Unicer, Vitalis, Lidl, Decathlon, Prove, AderSousa, Gertal and Vieira de Castro;
- institutional partners: the Directorate-General of Health (DGS), the National Programme for the Promotion of Healthy Eating (PNPAS).

4. Interventions undertaken

During the first year, the focus was on preparing the community for the project implementation. In this period, the two project leaders of "Maia Menu Saudável" selected two schools to participate in the EPHE project (Gandra School Centre and Gueifães School Centre). Two schools with varied socio-economic status from different neighbourhoods were selected for the study. During this period, a motivation and awareness campaign was also designed to motivate the entire community to get involved in this project (school coordinators, teachers and the whole school community, children and their families). The first evaluation phase (baseline evaluation) was also conducted during this year.

During the second year, different actions were designed according to the results of the baseline evaluation. In Portugal, data showed stronger differences between the various socio-economic groups with variables related to fruit and vegetables consumption, soft drink intake and total screen time, namely the time spent watching TV. Children of low SES exhibited lower vegetables and fruit intake, a higher consumption of soft drinks, and a higher number of hours spent watching TV or on a PC. Regarding the determinants of the nutritional and sedentary behaviors related to the gap between SES, we identified four major behaviors amongst the children:

- the high cost of certain foods;
- the availability of foods (fruits and vegetables);
- the knowledge about food and nutrition (the importance of vegetables consumption);
- the inefficiency of parents to manage children´s nutritional and sedentary behaviours (TV watching and soft drink consumption).

According to these results, EPHE interventions had to focus on actions promoting fruit and vegetables intake, water intake instead of soft drinks and physical activity. The main interventions implemented were as follows:

The distribution of fruit & vegetables baskets

To encourage families to consume fruit and vegetables, baskets of fruit and vegetables were distributed to each EPHE family. This activity aimed to address determinants related to availability and the high cost of healthy foods. A partnership with local producers also helped encourage healthier eating habits.

Figure 3. Fruit & Vegetables Baskets.

Facebook contests for the EPHE families

During the second year of the EPHE project, Facebook contests were organised to promote the involvement of parents and families in the EPHE activities. For example, a Facebook contest was launched to support the "Fruit & Vegetables Baskets" campaign. EPHE families were encouraged to prepare and cook a recipe with the vegetables and fruits included in the basket and take a picture of the prepared dish. The family with the most creative picture received one basket of fruit and vegetables per week for a month.

"Vegetable Friends Project"

In the field of vegetables promotion, Maia Municipality has an on-going project called "Vegetable Friends". This project was developed in partnership with the Faculty of Nutrition at Porto University. This project targeted children and parents. The "Vegetable Friends" project consisted of 90-minute classroom workshops on a 4-week period. These workshops included cooking activities for children and tasting of

different recipes prepared with vegetables. These workshops provided skills regarding vegetables, nutritional and food plant facts as well as health benefits. Different games, team competitions and other entertainment activities were also organised during these workshops. Each workshop session focused on a different group of vegetables. This activity was developed in close cooperation with FCNAUP, and all the sessions were designed by graduate students of Nutritional Sciences course. All the sessions were supervised by nutritionists from FCNAUP and Maia Municipality (Figure 4).

Figure 4. Poster of "Vegetable Friends Project".

"Nutrition's Super-Powers" project"

Within the EPHE activities, a nutritional educational intervention was implemented during the school mealtime in order to encourage children to eat all foods provided at school lunch, mainly the more disliked ones, such as vegetable soup, vegetables and fish.

First, in each classroom was organised a workshop that explained the different nutrition's "super-powers" ("Strength Power" associated with meat, fish and eggs, "Energy Power" provided by foods like cereals and their derivatives, and "Protective Power" represented by vegetables and fruits) together with the health benefits of their consumption.

Secondly, a competition between the EPHE classrooms in each school was organised at lunchtime, during which two nutritionists monitored the children's food consumption (twice a week between March and June), encouraging their food intake.

For each meal's component eaten, the children received a "nutrition power" stamp (Figure 5). The winner of the day was the classroom that would have collected the most stamps. All children felt highly motivated for this activity and generally tended to eat all the food products.

Lastly, a formative session was provided to the school staff, with content related to the best practices for educational strategies to encourage children to eat healthy foods during school meals.

Figure 5. Poster of the "Nutrition's Super-Powers" project.

"Celebration of "World Water Day"

World Water Day is celebrated each year on 22 March to raise awareness on the importance of water intake. As a joint action between all EPHE communities, this day was celebrated, with the organisation of a big event in schools addressing two EPHE themes: "Move more!" and "Drink more water!". The main objective of this event was to make children aware of the importance of regular physical activity and the adoption of an active and healthy lifestyle, with water as the beverage of choice. Different activities related to athletics were organised in schools with the aim of promoting the athletics as a simple and fun physical activity modality and water consumption as the better beverage choice as well as making children aware of the importance of hydration during the practice of physical activity. For this intervention, a famous Portuguese athlete (Fernanda Ribeiro) was invited to perform the athletic activities within the schools.

"Good Sleep Habits" poster

A session with children was organised to explain the importance of sleeping well, and a bedroom poster, developed by a psychologist, with some rules for « good sleep habits » was distributed to the children.

Picnic for EPHE families

To celebrate the end of the second year of the EPHE Project's implementation in the Maia community, a picnic was organised for the all the community people involved. All children taking part in the EPHE project in Portugal were invited (about 280 children), their families as well as all the staff of the two schools involved in the EPHE project (teachers, coordinators and other workers). This event took place outside the school environment, in an urban park of Maia Municipality. The main goal of this initiative was to sensitise all children and families to the importance of a healthy lifestyle, promoting water consumption and intake of fruit as snacks, and at the same time to promote physical activity. Different animations were organised, including a Yoga course. (Figure 6).

Figure 6. Yoga class during the EPHE Picnic.

During the third implementation year, focus was put on the implementation of coordinated actions across the different EPHE communities, not only on the school level but more broadly on the community one, in order to create awareness and visibility for the EPHE themes at both local and national level. The activities organised were the following:

- World Sleep Day Celebration – An exhibition was organised in a shopping centre in Maia of pillows decorated by the children of each classroom involved in the EPHE project.
- World Health Day Celebration – During the day, fruit and vegetables were offered at the metro station nearest to the main square of Maia city. Children from a professional school offered fruit and vegetables with some flyers produced by the children involved in EPHE Project containing nutrition education messages regarding to the importance of fruit and vegetables consumption.
- World Water Day Celebration – A Facebook contest was organised, which challenged children and their parents to take a picture with a message related to the promotion of water consumption.
- International Dance Day Celebration – On the occasion, a flash mob was organised in the central plaza with a choreography created for a selected song for the EPHE project.

5. Remarkable activities

Within the implementation of the EPHE project, and considering the most successful initiatives, we would like to highlight the following aspects:

- One of the most successful initiatives within the EPHE project was the development of activities engaging the whole community such as the EPHE Picnic. These kinds of activities were an opportunity to involve the entire community directly

taking part in the EPHE project (children and their families, plus school staff), the community outside the school environment, the different private partners, and the political representatives.

- The importance of the development of a good social marketing strategy is determinant, considering the utilisation of social networks such as Facebook as an important communication tool. The use of communication tools in a dynamic way was very important to engage parents in the EPHE activities (Facebook contests with family challenges).
- The importance of the involvement of the mass media with the social marketing campaign to mobilize different actors and establish different partnerships. The endorsement of public partners in the EPHE project together with the political interest of the local politicians in this project increased since the baseline results were disseminated through the Portuguese national media.
- The rewards were important not only for increasing the participation rate, but also to obtain the parental support and involvement in all the interventions of a nutrition education programme. A great participation of children and their families in activities was indeed guaranteed whenever a reward was given.
- The importance of a good motivation campaign, mainly for the school staff (coordinators, teachers and educational assistants). The involvement and motivation of teachers in the project is integral to the success of any intervention in this area. For example, as a motivation tool within the EPHE activities, a healthy cooking workshop was organised with a Portuguese Master Chef for teachers involved in EPHE.
- According to the Portuguese baseline results from EPHE, it was clear that nutrition education programmes should go beyond the development of knowledge and skills on healthy eating. It is also important to provide competencies in the field of education.
- Nutrition education programmes should go beyond the development of knowledge and skills on healthy eating. It is indeed important to provide knowledge and skills in terms of educational strategies, either for the school staff or for parents and families, to encourage children to eat healthy foods.
- The importance of designing interventions relates directly to the real needs of the community targeted. Thus, it is crucial to include the baseline evaluation before the implementation of any strategy in the field of health promotion.

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Chapter 9

PAIDEIATROFI, Greece

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PAIDEIATROFI website: paideiatrofi.org/en

1. PAIDEIATROFI programme overview

PAIDEIATROFI is an EPODE-like programme for the prevention of childhood obesity that was launched in Greece in 2008 and implemented in 4 pilot cities.

In 2015, PAIDEIATROFI extends throughout 15 municipalities in Greece reaching more than 820,000 citizens, while 15 more cities have expressed their interest in entering the programme before the end of 2016.

The aim of the PAIDEIATROFI programme is to educate the city populations on a healthy and balanced diet to reduce childhood obesity rates in Greece. The aim is to help children up to 12 years old and their families change their lifestyles in a radical and sustainable way.

For children at this young age, most decisions regarding nutrition (food purchases, frequency and quality of meals, etc.) and physical activity (exercise, transport methods and more) are made within the family setting. The town is where the majority of daily activities are developed and where the family's daily contact is made with a variety of social entities such as schools, work, health, transportation, physical activity (sports

clubs). Therefore, it remains essential to take action at a local level in cooperation with all the local stakeholders involved with children and their families.

1.1. Philosophy

PAIDEIATROFI takes a community-based approach to inspire a lifestyle change at the local level in a sustainable way.

Both collectively and individually, citizens are being called on to raise awareness about the obesity issue, and particular emphasis is put on not stigmatising overweight individuals. PAIDEIATROFI uses a positive, concrete and "step-by-step" teaching and learning of nutritional balance and physical activity. According to the programme's educational philosophy, food appears as a source of pleasure and there is no stigmatisation of any food.

PAIDEIATROFI is a programme with a long-term view: it maintains realistic objectives and takes environment and other constraints into account such as time availability, time spent at home, budget, and product availability. The programme messages are based on national, European and international scientific recommendations. Moreover, these messages are regularly enriched by field experience and good practices sharing.

1.2. Organisation

In order to maximise the effectiveness of the programme, a professional structure has been created, including the National Coordination Team, the Local Team of every participating municipality and the National Scientific Committee. The responsibilities of those involved in the programme are outlined below.

The **National Coordination Team** is comprised of a team of three professionals who offer continuous and specialised services: training, communication and social marketing. Nostus Communications & Events is responsible for the National Coordination of the PAIDEIATROFI programme using its executives' expertise in social marketing and organisational techniques. The National Coordination Team is committed to providing continuous specialised training on the PAIDEIATROFI methodology. It also prepares new approaches and ideas based on the dynamics of the local teams and aims to change (local) social policies on childhood obesity. Finally, it provides communications support methodology for health professionals and the public, focusing on public health issues.

The **Local Team** in cooperation with the Local Project Manager of each municipality is the driving force behind the programme and implements the actions in the town. In order for actions related to public health to be effective, they must be specific and visible to all stakeholders involved. The communication of these actions facilitates the awareness, mobilisation and participation of the residents. The town is at the heart of the intervention and at the centre of the programme's philosophy. The aim of the

town is to strengthen dynamics of social groups and to alter professional practices in order to change the local environment. The active participation of multiple local stakeholders can help change the social environment of the area.

Each municipality determines a Local Project Manager to organise and coordinate the programme at local level and to mobilise the most important relevant stakeholders and municipal services. The National Coordination Team undertakes the continuous and effective training of the local project managers.

The **National Scientific Committee** supervises the development of the programme by taking into account national and international scientific guidelines.

The specialised, independent PAIDEIATROFI National Scientific Committee has been established for an efficient programme operation. This committee is composed of leading professionals and professors from the areas of Paediatrics, Child Psychology, Dietetics and Food Science. The purpose of the Committee is to place the programme in a national context, taking into account scientific guidelines. At the same time, the Committee supervises the development of the programme, its evaluation and publications; overall, it has an influence on the programme at a national scale. Finally, the Committee advocates for PAIDEIATROFI within the scientific, institutional and political environments.

1.3. PAIDEIATROFI National Scientific Committee Members:

- **Georgios P. Chrousos,** Professor/Chairman of the Department of Paediatrics at the Athens University Medical School;
- **Efthimios Kapantais,** Specialist Pathologist/Diabetologist, General Secretary of the Hellenic Medical Association for Obesity;
- **Yannis Manios,** Associate Professor, Department of Nutrition & Dietetics, Harokopio University;
- **Antonis Zampelas,** Professor, Human Nutrition Department, Agricultural University of Athens;
- **Panagiotis Varagiannis,** Dietician/Nutritionist, General Secretary, Hellenic Dietetics Association;
- **Paris Papachristou,** Dietician/Nutritionist, Hellenic Institution of Gastroenterology & Nutrition;
- **Konstantinos Karteroliotis,** Professor/Head of Theoretical Sciences, Faculty of Physical Education and Sport Science, National and Kapodistrian University of Athens;
- **Giannis Kalfas,** Dietician/Nutritionist, Hellenic Association Nutritionists & Dieticians;
- **Nikos Efstathiou,** Educator.

1.3.1. *Institutional, scientific and private partners*

The PAIDEIATROFI childhood obesity prevention programme has the support of key governmental and scientific bodies and runs under the auspices of:

Institutional Bodies:

- the Ministry of Culture and Sports;
- the Hellenic Healthy Cities Network.

Scientific Bodies:

- the Hellenic Diabetes Association;
- the Hellenic Society for Clinical Nutrition and Metabolism;
- the Hellenic Medical Association for Obesity;
- the Hellenic Foundation of Gastroenterology and Nutrition;
- the Hellenic College of Paediatricians;
- the Greek Dieticians and Nutritionists Union;
- the Hellenic Society for the Study of Risk Factors in Vascular Diseases;
- the Pan-Hellenic Association of Dieticians and Nutritionists.

1.3.2. *Partners and collaborations*

Private partners guarantee the funding of the programme at the national level while supporters at the local level are encouraged to contribute to the funding of local activities either with funds or through in-kind donations. The Local Project Managers are in contact with the local businesses to incentivise them to participate as actively as possible in the programme and to become part of a PAIDEIATROFI initiative. The private sector serves as a catalyst for the public sector to fund the cities for the actions related to public health.

Since November 2013, PAIDEIATROFI's private partner is the Coca-Cola Foundation, which supports the programme within the context of the company's global commitment to promoting physical activity and balanced nutrition.

All private partners both at national and local levels sign an agreement with the National Coordinator and the municipality respectively, stipulating the benefits and obligations involved in this cooperation. Within those agreements, private partners agree to support the programme and its objectives financially as well as in any other way possible, such as volunteerism, transfer of expertise, etc, and to communicate their involvement at a corporate level, without interfering in the scientific content or implementation methods.

PAIDEIATROFI IN NUMBERS: 2008 – 2015	
15	Municipality members
9	Themes about nutrition & physical activity
60,000	Leaflets & posters distributed to the local population
40	Scientific events with the participation of PAIDEIATROFI
1,000	Reports in National & local media (print, web, TV and radio)
220	Local activities organised by the PAIDEIATROFI municipality/members

1.3.3. *Evaluation of the programme*

PAIDEIATROFI is not a scientific research programme but an intervention programme. However, in order to evaluate the effectiveness of its actions and the change in behaviours of the families participating in its activities at a local level, PAIDEIATROFI has teamed up with the Harokopio University of Athens to conduct a survey to evaluate the programme according to a number of indicators including:

- the evolution of childhood obesity and overweight in PAIDEIATROFI cities compared to the reference city, using BMI data recorded by the university in all of the schools of two PAIDEIATROFI cities;
- the change in families' behaviours towards healthier nutrition and physical activity as well as the families' participation in PAIDEIATROFI activities.

The survey has been launched in May/June 2014 and was completed in May/June 2015. The results of the survey will be announced in September 2015.

2. Social marketing activities

Once or twice a year a PAIDEIATROFI theme is selected and highlighted in order to:

- Promote a balanced, diversified, affordable and fun diet;
- Encourage children and families to be more active and to exercise on a regular basis.

Dedicated tools and roadmaps for different target audiences (teachers, dieticians, local teams, parents, children, etc...) help foster pleasant and balanced eating habits and greater physical activity in everyday life:

- Information in the way of posters, guides, leaflets, pedagogical kits....:
  - practical advice;
  - adapted tricks to daily life;
  - help to understand behaviours.
- Proximity actions targeting families:
  - public meetings;
  - cooking lessons;
  - pedagogical sessions in schools;
  - sensory early-learning sessions.

Date	Topic	Objective
2008	We move and we like it!	Promotion of physical activity and reduction of sedentary behaviour, encourage family physical activities.
2009	The season has the taste for fruit!	Promotion of fruit consumption, tips for parents to encourage their children to try more fruits on a daily basis.
2009	Breakfast – My secret weapon!	Promotion of the importance of breakfast consumption to children and their families; link energy for daily activities with breakfast.
2010	The season has the taste for vegetables!	Promotion of vegetable consumption, tips for parents to convince their children to consume more vegetables.
2011	Simple, economic and healthy eating!	Promotion of everyday home cooking, and understanding of the cost per portion of food prepared at home compared with that of catering, restaurants, etc.
2012	Fish and Seafood!	Promotion of fish and seafood consumption, tips for parents to convince their children to try more kinds of fish and seafood.
2013	My portion size!	Promotion of a balanced portion size according to the needs of each age, understanding on how to measure correct portions for children and adults.
2014	Physical Activity!	Promotion of physical activity on a daily basis and reduction of sedentary behaviour, encouraging family physical activities.
2015	Energy Balance!	Promotion of energy balance concept; understanding how energy and daily activities are linked, promotion of family activities, better sleep.

EXAMPLES OF LOCAL ACTIONS

Date	Topic	Results
Sept/Dec 2013 **Jan/Apr 2014**	Constructions of the Pyramids of Physical Activity and Balanced Nutrition	Children were acquainted with the different varieties of food and the relation between energy and PA.
Sept/Nov/Dec 2013	Cooking Lessons & Contests	Children were introduced to cooking and experimentation with food.
Nov 2013	Wald of the family	Children and their families participated in a walk on a designated path in a local grove.
June 2014	Dance Festivals	Children prepared dancing routines and gave performances in front of their peers and families.
Feb 2014	Informative talks for parents	Parents were briefed about the importance of balanced nutrition and how to include those principals in their everyday life.
Dec 2013	Creation of comic books by artists and pupils	By participating in the creation of a comic book, children understood the benefits of sleep and the negative effects resulting from not sleeping enough.

Date	Topic	Results
May 2014	Floor games in schoolyards (twister, hopscotch)	After children participated in the creation of floor games, they used them on a daily basis.
Mar 2014	Vegetable gardens in schoolyards	Children were introduced to the food chain, from the seeds to the final vegetable, and got the opportunity to consume the vegetables produced.
Apr 2014	Distribution of fruits ξ fruit salads in schools	Children consumed more fruits per day and adopted the habit of eating more fruits on a daily basis.
Apr/May 2014	DIY leaflets and recipe books	Children created leaflets and recipe books that were distributed amongst them.
May 2013	Interactive workshops for families	Families understood how to interact with their children in order to promote healthy nutrition habits.
May 2014	Festivals of physical activity	Children performed physical activity games in the school and in front of their parents.

3. EPHE Community

3.1. Maroussi

The EPHE National Coordination Team selected Maroussi as the pilot city for the EPHE project because of its varied demographic profile. It is one of the largest municipalities in Greece and its inhabitants have different socioeconomic backgrounds and educational levels.

In addition, Maroussi has been a very active PAIDEIATROFI city since 2009, implementing successful actions in the field for the prevention of childhood obesity. The PAIDEIATROFI team has had an excellent cooperation with the Mayor, the municipality representatives and employees. Thus, we decided to invite Maroussi to participate in EPHE to further extend this fruitful collaboration and to work together for the promotion of health equity, in terms of physical activity and nutrition.

Maroussi is a suburban city in the northeastern part of the Athens agglomeration, Greece. Within Maroussi lies the biggest forest in urban Athens, Dasos Syngrou. The Athens Olympic Sports Complex, the largest sports complex in Greece, built for the 2004 Summer Olympics, is located in the southwestern part of the municipality.

3.2. Number of schools/beneficiaries

In Maroussi, two local elementary schools participated in the EPHE project. Each school represents the socio-economic status of the area within which it is located. The 15th elementary school is located in an area where parents have medium-to-high socioeconomic status and education level, while at the 16th elementary school parents have medium-to-low socioeconomic status and educational backgrounds.

In total, there were 180 children and families participating in the EPHE programme and its evaluation process.

INFRASTRUCTURE IN SCHOOLS

	15th Primary school	16th Primary school
Medical service for school	NO	NO
Canteen	YES	YES
Type of canteen	PRIVATE	PRIVATE
Snacks offered approved by a dietician	NO	NO
Water fountain	YES	YES
Playground	YES	YES
Sports field	YES	NO
Sport hall	YES	NO
Compulsory physical activity	YES	YES
Possibility of extra school PA	YES	NO

3.3. Local partners

There were a large number of local partners working together for the implementation of the EPHE programme at Maroussi, each contributing to the project according to their specialisation and capacities:

- Mayor and Vice-Mayors;
- the Local Town Council;
- the Municipality Department of Education;
- the Municipality Department of Social Services;
- the Municipality Department for the Environment;
- the Municipality Department of Public Relations;
- PAIDEIATROFI national and local teams
- agriculturists;
- nutritionists/dieticians;
- doctors;
- the school principals and teachers;
- local artists (painter, comic artist...);
- local NGOs;
- local sponsors and stores.

4. Interventions Undertaken

4.1. The Preparation Step

The first year of the EPHE project included initial actions for the introduction of EPHE at the local level in order to gain support from the local actors and to motivate the families involved in the study sample to participate in the first evaluation phase. These actions included having meetings with municipality representatives, disseminating information, sending out invitation letters, holding presentations about the programme as well as providing motivational tools for the evaluations, organising educational trips for children to sports centres for physical activities and to other venues for nutrition education.

4.2. The Intervention Step

Following the completion of the first evaluation process, the second year was dedicated to the implementation of local EPHE actions on the field. A number of original and interactive activities were implemented in order to address the determinants of this baseline results analysis. The following actions were implemented:

- educational excursion at Mount Parnitha;
- Ionathan Sports Centre - educational visit;
- parents' information meetings;
- distribution of press releases at national and local level, website and Facebook posts, posts on school blogs;
- EPHE Opening Celebration;
- a mini questionnaire on fruit, vegetables ξ water consumption, sleep and physical activity;

- "Grape – the Protagonist of the Autumn" – educational visit;
- website and Facebook posts;
- cooking lessons with vegetables;
- PAIDEIATROFI Walk for the Whole Family;
- the distribution of the Pyramid of balanced nutrition, food hygiene and physical activity;
- the distribution of posters, leaflets and school programmes, promoting physical activity;
- workshops on the consumption of water;
- the construction of the Physical Activity Pyramid;
- the decoration of the School's Vessels Area;
- workshops on the increase of quality/quantity of sleep;
- the fruit and vegetables open market;
- the construction of the Pyramid of Balanced Nutrition;
- the creation of The Rainbow of Fruits & Vegetables;
- a blind man's buffet with vegetables;
- a post on the 16th elementary school blog regarding the following EPHE actions for the period February - June 2014;
- « I am what I eat » educational programme;
- a salad bar for Mardi Gras celebration;
- the Parents' Information Day;
- « Make your own EPHE leaflet » action;
- the EPHE World's Water Day;
- the creation of a comic book regarding sleep;
- herbs and vegetable gardens in schools;
- the Month of « Fresh Fruits »;
- workshops on the increase of quality/quantity of sleep;
- fruit and vegetables cook books;
- painted floor games in the schoolyards for the promotion of physical activity;
- the EPHE Festival;
- the annual field trip;
- the vegetable gardens harvest;
- the EPHE Summer Celebration.

4.3. The Observation Step

The third year of the EPHE project focused on obesity prevention activities that targeted the whole Maroussi community. These activities sought to continue to raise awareness throughout the community, schools, and families participating in the EPHE project evaluation process.

In September 2014, we organised meetings with all of the directors and teachers (from grades 1, 2 and 3) of the schools in order to explain the last stage of the project: the EPHE classes were invited to continue the PAIDEIATROFI activities such as workshops about fruits and physical activities.

Onsite visits to both schools were held in April 2015. These occasions were the opportunity to hold meetings with the head masters regarding the final coordination of the 3rd questionnaire in June 2015 and to brief the parents about their voluntary participation in organised events within the schools for the promotion of healthy eating, including preparing healthy snacks with their children, games promoting healthy and balanced eating behaviours and physical activity.

5. Remarkable activities

Action: Family Day at Syggrou Grove

Objective: Promotion of physical activity and less screen time

Local actors:

- the PAIDEIATROFI National Coordination Team;
- the PAIDEIATROFI Local Team;
- the Maroussi Municipality Department of Education;
- the Maroussi Municipality Department of Environment;
- the Maroussi Municipality Department of Social Services;
- the Maroussi Municipality Department of Public Relations;
- the Mayor and Vice-Mayors of Maroussi municipality;
- the Agricultural University of Athens;
- the Hellenic Dieticians Association;
- the school principals and teachers of all local elementary schools of Maroussi;
- NGO KEAN;
- the dietician, member of the local PAIDEIATROFI team;
- sponsors (Coca-Cola, a local bookstore, a local fruit producer);
- the NGO for the Environment KEAN;
- the Institute of Agricultural Sciences.

5.1. Description of the action:

The EPHE action "Family Day at Syggrou Grove – we move, we learn and we have fun!" was completed successfully, on Sunday, 10 November 2013.

With great enthusiasm and the good weather, younger and older friends of PAIDEIATROFI gathered at the entrance of the Grove on Sunday morning to participate in a unique event, which had everything! We started with a walk in the Grove, aiming at promoting physical activity and having a first acquaintance with this precious oasis of 1,000 acres of oxygen and green area.

At the end of the route, loud music was playing via the open theatre's megaphones welcoming the children and their parents and inviting them to take their seats in order to watch the second part of the event. The Mayor of the Municipality of Maroussi, Mr. G. Patoulis, welcomed the participants, along with Ms. Helena Stamou, National Coor-

dinator of PAIDEIATROFI and the President of the Institute of Agricultural Sciences, Mr. Leonidas Kazakopoulos.

Later, clinical dietician Maria Koufaki took the stage and, with the help of a three-dimensional structure, informed the attendees about issues regarding balanced diet, health and physical activity. Within the framework of the EPHE programme, one three-dimensional food pyramid was offered to every primary school of the Municipality of Maroussi, as an educational tool.

Then, in cooperation with the N.G.O. KEAN – Cell of Alternative Youth Quests, all the children participated in the Planetbook floor game; a game about the planet and the environment.

Many more surprises and gifts awaited the young participants, such as board games and educational books. Water, juices and fresh fruits were also distributed to the participants, as in the PAIDEIATROFI programme, the physical activity goes hand-by-hand with a balanced diet.

The sponsors were Coca-Cola 3E with the natural juice Amita, Agrotica Center and several partnering organisations, like the Hellenic Dietician Association and the Agricultural University of Athens who also contributed to the success of the event.

5.2. Key Lesson:

The success of the activities implemented in the framework of a community-based programme is widely dependent upon the smooth collaboration of various local actors.

From the initial brainstorming and planning of an action in the field up to the day of the event, it is really important to include key local actors that will contribute something different to the event, according to their expertise, uniqueness and role. All of these partners have distinct roles and can contribute something different and valuable to the programme.

In our case, the various departments of the municipality came together to organise the EPHE activity, using their excellent knowledge of the Maroussi community and its local population.
The environmental organisations were able to add a different character to the event, helping families to learn about the Grove plantation and to become educated on its natural environment. Contact with nature can be a major motivation for physical activity and less screen time.
Nutrition experts were able to inform parents on key issues about their children's diet, through practical examples and advice.
The school staff informed the parents about the details of the event and invited them to participate, securing high attendance to the EPHE event.
The PAIDEIATROFI team was responsible for the coordination of all of these partners, the planning and promotion of the event, the budget allocation and the management of any unforeseen issues on the day of the Family Walk.

Chapter 10

SETS, Romania

Silvia Bucur, Ionela Badescu

SETS website: sets.ro

1. SETS programme overview

PRAIS Foundation initiated, in March 2011, for a period of 5 years, "I'm living healthy, too!" – SETS, the first national movement aiming at preventing childhood obesity and promoting a healthy lifestyle among Romanian families, in a holistic approach: mind, body and spirit. The movement advocates for the development of healthy behavioural and lifestyle patterns for children and families.

The specific objectives of the SETS movement are:

- to inform families and the general public about the benefits of a daily balanced diet;
- to encourage daily physical activity;
- to create a Romanian alliance of values: important stakeholders, such as scientifics, doctors, universities, institutional partners, key opinion leaders (KOLs), companies and associations.

Ever since the launching of this childhood obesity prevention project in Romania, the SETS movement applied the EU acknowledged methodology developed by the Epode International Network (EIN) and which is based on 4 pillars: political involvement at local and national level; a social marketing approach; resource gathering through public/private partnership; assessment and dissemination of results.

1.1. Methodology

For 5 years, SETS sought to prevent childhood obesity using a holistic approach, via direct interventions in schools, towards families and within the selected communities through:

- **common work of the SETS Scientific Council**: doctors, psychologists, academics, food safety specialists contribute to studies, public debates, and publish opinions to support the cause in the media;
- **dissemination of free educational books**: in all the primary schools involved in the SETS movement, PRAIS Foundation provides the pupils with extracurricular educational books free of charge, to promote daily physical exercises, a balanced diet, and Olympic sports –as values and role-models– in addition to informative materials, based on which the educators deliver lessons within extracurricular classes, throughout the school year;
- **educational kits and trainings for teachers**: delivered at the beginning of each school year to all teachers and school principals involved in the project;
- **all schools covered by educational SETS posters**: increase in number each year;
- **the creation of SETS Clubs "Sports and Entertainment!":** a new activation concept addressing all pupils for after-school physical activities and contests. SETS Clubs are voluntarily organised by the pupils, but remain under the coordination of the educators. All physical and sports activities done during their free time are registered in the annual competition of the most active clubs on www.sets.ro, the movement's communication platform, where children, as well as parents and the public at large, can easily find information;
- **open lessons in schools**: each year, volunteer students from sports universities present to children the sports they can practice, and then exercise together;
- **the direct dissemination of the SETS information kit to all parents;**
- **strong media and online communication campaigns, including www.sets.ro,** with 2 sections, for parents and for children, videos and written interviews with KOLs, articles about nutrition, sports, and a balanced lifestyle.

1.2. Organisation

The central coordination team manages all relations with the partners, private and public. Through regular meetings with their representatives to inform them on the agenda of activities for the SETS movement and on the steps to follow, the team can specifically indicate how partners can get involved. The central coordination team also edits regular evaluation reports on the status of implementation and results.

All programme interventions are coordinated at central level by the PRAIS Foundation team, which consists of:

- SETS' Strategic Developer;
- SETS' Programme Director;
- SETS' Communities Coordinators;
- SETS' Scientific Council.

The local coordination consists of all school coordinators and teachers that implement the movement through extracurricular methodologies and activating pupils and their families in the SETS clubs.

All activities and interventions designed at central level are implemented in the field with the support of the local coordination teams, based on a detailed programme schedule communicated to them at the beginning of the school year.

For the first time, the issue of childhood obesity is holistically approached, with the support of the Scientific Council of the SETS movement, which gathers renowned medical doctors, educators, psychologists and Olympic athletes.

SETS' Romanian movement created an alliance of 22 public and private partners, including:

Scientific partners:

- the Bucharest National University of Physical Education and Sports (UNEFS);
- the Cluj Faculty of Physical Education and Sports (FEFS);
- the Timisoara Faculty of Physical Education and Sports;
- the Romanian Federation for Diabetes, Nutrition and Metabolic Diseases;
- the Romanian Nutrition Society.

Private partners:

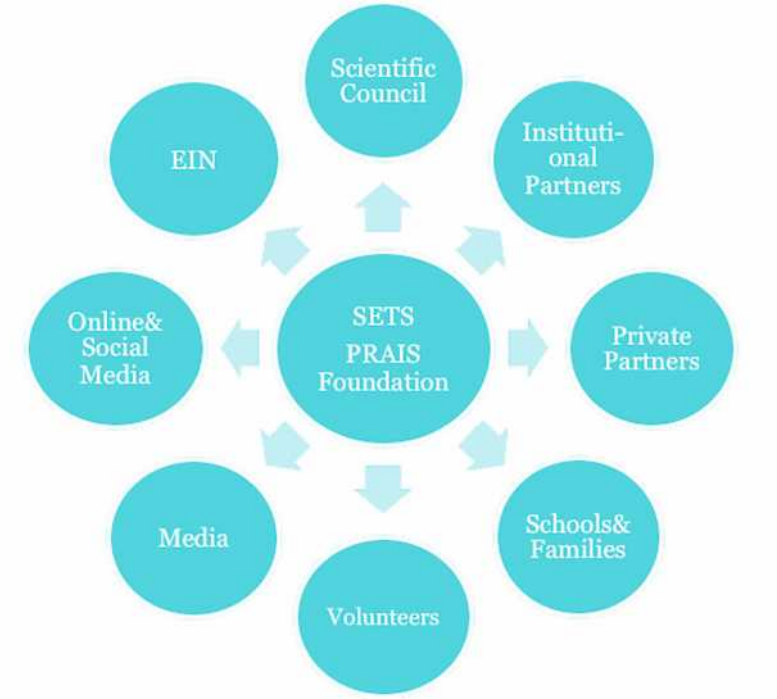
- Romalimenta (Romanian Food Federation) through 5 member companies: Nestlé Romania, Mondelez Romania, Coca-Cola Hellenic, Unilever, PepsiCo;
- Carrefour Romania.

Institutional partners:

- the Ministry of Health;
- the Ministry of National Education;
- the Ministry of Youth and Sports;
- the School Directorates in Bucharest, Cluj, Neamt and Timisoara;
- the "Ioan Petrus" high school in Otopeni;

- the Cluj-Napoca, Otopeni and Roman City Councils;
- the Romanian Olympic and Sports Committee (COSR);
- the Romanian Athletics Federation;
- the Romanian Fencing Federation.

A 360° communication plan targeting all audiences



1.3. Results

Since its launching, SETS has reached 116,340 pupils in the primary education cycle in 252 schools in Bucharest, Cluj-Napoca, Roman, Otopeni and Timisoara, over 3,000 members of the teaching staff, and over 240,000 parents – 2 million in audience. 376 UNEFS and FEFS students have voluntarily delivered 330 open lessons, sports demonstrations, thus becoming true role-models for the pupils.

Throughout the 4 years of this programme's existence, over 13,810 students signed up to the 344 SETS Clubs, partaking in 6,237 physical activities in association with a balanced diet, for the healthy development of children.

In addition to the first-hand interventions implemented in schools, the SETS national movement built the public information portal dedicated to both parents and their children – www.sets.ro, registering over 425,494 visitors, as well as a social media platform (consisting in SETS' Facebook pages, with over 33,000 friends, and Twitter, Youtube, and Instagram accounts).

In the autumn of 2011, PRAIS Foundation was invited to ensure the presidency of SETS Romania at the meeting of Health Ministries' representatives, DG Sanco - High Level Group on Nutrition and Physical Activities. The participants applauded the SETS methodology, which is compliant with the EPODE approach, as well as the sustainable 5-year intervention and the use of a public/private partnership.

A 2014 study evaluated the impact and effectiveness of SETS methodologies and information tools used to implement the third annual edition of the SETS movement during the 2013-2014 school year.

Main conclusions of the study:

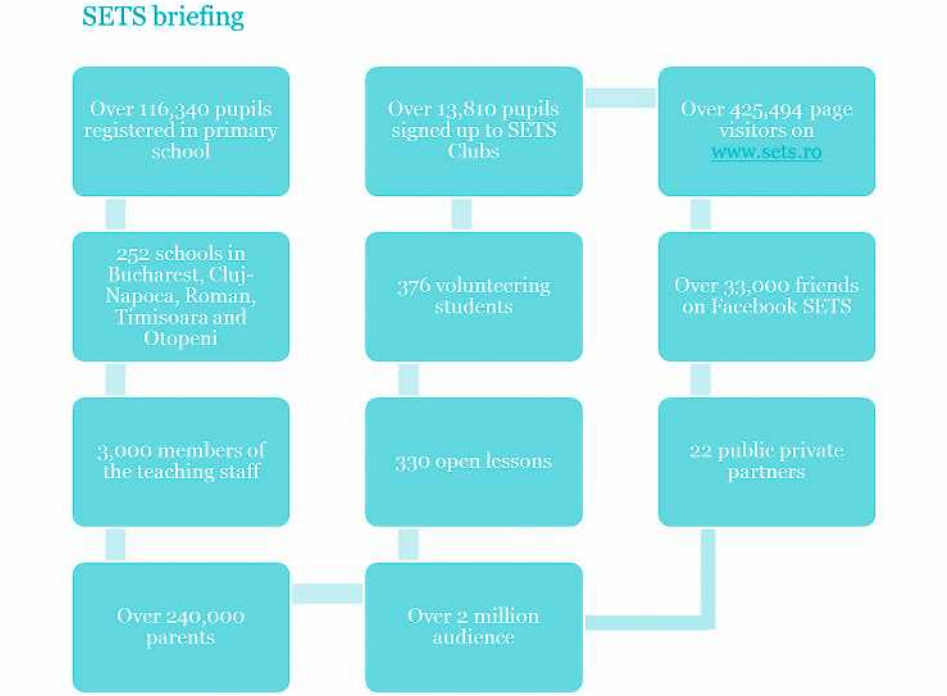
- It remains essential that children have access to information on healthy lifestyle;
- All respondents have agreed that the implementation of SETS movement over a period of 5 years can influence pupils and their families' lifestyle habits;
- www.sets.ro is a major information source for the teachers involved in the movement, as they are often accessing the website, creating and uploading activities for SETS Clubs "Sports and Entertainment!"; SETS' Facebook page is an important information source for teachers, students and parents;
- During the 2013-2014 school year, the participating teachers devoted an average of 80 extracurricular hours to organise SETS activities with the children;
- 86% of the teachers declared that thanks to the SETS methodologies and interventions, the students' interest in physical activities has increased;
- 93% of the teachers have noticed a change in their students' eating habits after they were presented with the information contained in the SETS educational materials;
- The students retained most of the SETS educational materials;
- Teachers declared that a majority of parents (92%) consider the SETS movement and its educational materials as having a positive impact on their children;
- 99% of the teachers consider that SETS activities have a positive impact on the pupils' health and lifestyle;
- Pupils' involvement in SETS Clubs "Sports and Entertainment!" is considered beneficial to changing their lifestyle habits by a majority of teachers;
- The children involvement in SETS Clubs was perceived as a positive action by 94% of the parents.

PRAIS Foundation participated in studies, and presented the results and SETS' accomplishments at 4 national congresses on diabetes and nutrition.

As recognition of the importance of the movement at national level, "I am living healthy, too! – SETS", implemented by PRAIS Foundation, was rewarded with 2 important prizes, at Romanian PR Awards (2013) and the Romanian Society Gala Award (2014).

SETS promotion, up-to-date results:

- 42 media campaigns;
- 875 press materials "no cash for editorial";
- 425,494 unique visits on www.sets.ro;
- 33,000 Likes on Facebook;49 videos posted on Youtube that were viewed 9,420 times.



2. Social Marketing Activities

SETS movement approaches the obesity issue from a social marketing perspective, which enables the PRAIS Foundation to strongly support the social cause. The movement uses marketing and brand promotion mechanisms: inspiring logo and positive slogan, role-model-focused illustration and contents of the books for the students, the portal with 2 universes for children and parents, playful activation in SETS clubs of a large number of children, together with the alliance of local and international values created by the movement, adding to the TV and radio spot, wide-scope public events and intense media campaigns.

"I'm living healthy, too!" - SETS movement is using all social marketing tools in order to promote a healthy lifestyle amongst the targeted audiences, with a holistic approach using all available channels.

The campaign is designed to take into consideration the national context and the results of each year's implementation period to measure the impact and gather feedback from the targeted audiences.

The SETS Scientific Council gathers renowned doctors, psychologists, academics, food safety specialists, and holds periodic meetings to discuss the new studies on obesity prevention, and make recommendations for the implementation team.

On each implementation period, the team choses a main theme to be addressed at school through specific interventions and communication campaigns.

After the dissemination of free educational books in all the primary schools involved in the SETS movement, the educators deliver lessons within extracurricular classes throughout the school year. They also use the educational kits and are involved in trainings to help them implement the SETS activities and obtain visible results.

"SETS Clubs – Sports and Entertainment!" is a new activation concept designed by PRAIS Foundation that addresses all students, which on a voluntary basis are involved in after-school physical activities organised by the coordinating teachers. All physical and sports activities are registered on www.sets.ro. The annual competition of the most active clubs in SETS cities are awarded with special prizes during the annual awards ceremonies.

Every school year, over 100 students from the sports universities partners of the movement become volunteers within SETS and go to the schools to hold open lessons, do sports demonstrations for the children and exercise with them.

All interventions in the field are documented and promoted on the movement portal, www.sets.ro, and via strong media and online communication campaigns.

SETS activities are promoted to the general public via:

- launching events with the participation of the mass media and partners;
- the SETS Clubs awards ceremonies roadshow;
- media campaigns on nutrition and topics related to the yearly theme;
- the promotion of SETS interventions as part of the EIN.

3. EPHE Community

In Romania, the chosen city for the implementation of the EPHE project was Otopeni, a community in Ilfov County, situated 15 km north from Bucharest.

The town's total population is approximately 12,671 inhabitants and the average income in 2013 was of RON 1,892.

Following the scientific criteria, the city of Otopeni was chosen for the implementation of the EPHE project for the following reasons:

- only one school in the city gathers children from all socio-economical categories, which allowed reaching all targeted beneficiaries;
- the city had not participated in other projects dedicated to the promotion of a healthy lifestyle.

Another added value to this city was the political involvement, the endorsement of the programme, and good knowledge of local stakeholders:

- good relations with local authorities (the school, the City Council, the School Inspectorate);
- prior successful collaborations on other projects.

The main school in town, "Ioan Petrus" High School - which includes primary classes and 4 kindergartens - developed wide extracurricular activities involving the

1,725 students registered in the school year 2012-2013. "Ioan Petrus" High School accepted PRAIS Foundation proposal to be part of EPHE as soon as the project was presented to the board.

The EPHE project in Otopeni targeted all 1st grade students during 2012-2013, which ensured their continuous involvement during the 3-year intervention. Thus, starting 2012, 185 children and their families actively took part in the project interventions and the evaluation process.

The main local partners of the project, which supported the development and implementation of all EPHE actions, were the Otopeni City Council and "Ioan Petrus" High School.

4. Interventions Undertaken

4.1. The preparation step

The first year of the project focused on selecting the community and gaining the support of the local potential partners in Otopeni in order to ensure a successful implementation of the project. After securing all partnerships, the PRAIS Foundation organised a motivational campaign addressed to the families of the selected children to gain their involvement in the project and ensure high participation in the main action developed during the baseline evaluation period.

Questionnaires and open letters distribution in classes

4.2. The Intervention step

During the 2013-2014 school year, the PRAIS Foundation implemented the SETS methodologies in the EPHE school, and applied all actions and interventions designed

in the framework of the national movement: delivering educational materials to children and their families (books, posters, open letters to the parents), organizing SETS "Sports and Entertainment!" Clubs competitions, and holding open lessons on the importance of daily physical activities by volunteer students from sports universities.

Also, interventions based on the project's 4 themes were organised with a main focus on the behaviours to be addressed resulting from the baseline evaluation in Otopeni:

- fruit ξ vegetables consumption;
- Fruit juices ξ soft drinks consumption;
- total screen time (TV, computer) in relation with sleep.

At the end of the school year, the second evaluation phase was implemented, with an over 95% response rate.

4.3. The observation step

The last implementation year of the EPHE project was mainly dedicated to the activities organised as part of the SETS national movement, which involved all local partners of the project:

- delivering educational materials to children and their families: booklets for every child on the importance of a balanced lifestyle, posters, information kits for teachers, open letters to parents;
- organising SETS "Sports and Entertainment!" Clubs at class level;
- organising open lessons held by volunteer students of the sports universities on the importance of daily physical activities.

5. Remarkable activities

"Discover the 5 senses!" Open lessons on fruit and vegetables -

Following the baseline evaluation, the results indicated a need to increase fruit and vegetables consumption in the EPHE project families.

In order to educate children and parents about the benefits of daily consumption of fruit and vegetables, a special activity was implemented in Otopeni's EPHE school: the "Discover the 5 senses" open lessons.

All 180 children participated in the intervention with great enthusiasm.

For this activity, PRAIS Foundation prepared for every child and teacher the "Fruit and vegetables hour" booklet. The material contained information on the most consumed fruits and vegetables in Romania (their nutritional values, why it is important to include them in our daily diet, etc.), as well as games and quizzes.

2 actors dressed in fruit costumes explained to the children the importance and benefits of fruit and vegetable consumption, based on the information provided by the project nutritionist.

The animators involved the children in an active dialog about fruit and vegetables. They asked the students to name some of their favourite fruits and vegetables, to talk about the difference between fruits and vegetables, and to name some delicious recipes with fruits and vegetables.

After the discussion, the animators asked for volunteers amongst the children. The selected students came in front of the class, were blindfolded and invited to use their other senses to discover a fruit or a vegetable (through smell, touch, taste) and name it. After what the animators would speak about the benefits of the named fruit or vegetable on one's health.

At the end of the lesson, children would be asked questions about the fruits and vegetables that the animators talked about to verify if they remembered what they had just learned.

Also, as a reward for their participation in the activity, and to encourage consumption, all the children received fruit salads with oranges, mango, grapefruit, and kiwi.

Children were encouraged to take home the booklet on fruit and vegetables for their parents to see and further discuss with them what they had learned.

The activity on fruit and vegetables consumption was greatly appreciated by the children, parents and teachers, and the implementation team received positive feedback.

In order to obtain positive results from the interventions, it was essential to deliver informational materials, have special animators communicate the messages, and target the parents. This intervention serves as a best practice, since its implemen-

tation methodology combines different tools to deliver key messages and ensure a positive impact on the target group.

Chapter 11

VIASANO, Belgium

Mireille Roillet, Brigitte Aubert, Sophie Baelen, Virginie Ooge, Xavier Lepoivre

Viasano website: viasano.be

1. VIASANO programme overview

Viasano is an EPODE-like programme that was created in Belgium in 2007 for the prevention of childhood obesity. The programme was implemented in the pilot cities of Hasselt (Flemish region) and Mouscron (Walloon region).

A chart is signed between the Viasano coordination team and the council of towns' representatives. The towns collaborate on a no-charge basis and commit to the programme for at least 4 years.

In January 2015, Viasano reached 20 towns in each region (Flanders, Wallonia, Brussels), mobilising a total of 815,000 inhabitants.

1.1. The organisation of the programme

Viasano functions according to the EPODE model.

1.1.1. *Central level: the coordination team*

A bilingual team of 3 people is in charge of the general management of the programme:

- Mireille Roillet is the French speaking coordinator in charge of the general management, coaching the French-speaking towns and their recruitment together with partner relations;
- Valerie Bruyninckx is responsible for coaching the Flemish towns, communication and PR;
- Nathalie Ryckaert plays an administrative role and manages the hot line with the towns.

At local level, the Viasano national coordination team supports the communities by providing them with training, methodological support, campaign tools for the local stakeholders, the sharing of experiences with other towns, and communication coaching at local level.

At national level, the Viasano team is responsible for the information, involvement and motivation of the different partners. Viasano creates for the towns the social marketing campaigns with all the deliverables, and organises the evaluation of the

programme at 2 levels: past activities and evolution of the prevalence of overweight in children living in the Viasano towns.

1.1.2. *Local level*

The mayor decides if his/her municipality will participate in the programme. Each of the Viasano cities appoints a project manager, who is in charge of setting up the programme locally. The project manager selects a team of local experts to safeguard the scientific validity of the programme (a local GP, a dietician and a sports coach, for example). Furthermore, the project manager and the local expert team supervise the collaboration between all the stakeholders (teachers, shops, restaurants, doctors, etc.) in the creation of concrete on-site actions.

The cities are responsible for editing, printing and distributing the tools (guides, brochures, leaflets…) prepared by the national coordination team, as well as for the organisation of activities (different for each city and depending on the time of the year – inspired or not by national campaigns).

1.1.3. *Scientific level: the scientific committee*

A bilingual and independent expert committee was created to certify the programme, its messages and the local initiatives. Furthermore, its members are ambassadors to the programme with the media. The work process is the following: 2 plenary meetings per year for the covenant of the programme's general strategy, and dedicated workshops in small groups on specific topics (campaigns, articles, symposia, trainings of the local project managers, etc.).

From Flanders
Prof. Dr. Em. J. Vinck, Professor in de Psychologie, Universiteit Hasselt
Dr. Nele Jacobs, Doctor in de Biomedische Wetenschappen, Universiteit
Wouter Goris, Motivatiepsycholoog, Manager Ready2improve
From Brussels
Prof. Dr. J. Nève, Professeur à la Faculté de Pharmacie, ULB
N. Guggenbühl, Diététicien Nutritionniste, Professeur à l'Institut Paul Lambin à Bruxelles
Dr. C. De Laet, Pediatre, Hôpital Universitaire des Enfants Reine Fabiola
From Wallonia
Prof. Dr. Em. C. Brohet, Professeur en Cardiologie, UCL
M.-C. Hames, Enseignante, Robert-Schuman-Institut, Eupen
Dr. A. Boucquiau, médecin nutritionniste, Présidente de la Société Belge des Médecins Nutritionnistes

1.1.4. *Partners and collaborations*

One of the pillars of the programme is the public/private partnership (PPP).

The private/financial partners support Viasano as part of their CSR engagements. They have signed a charter in which they pledge to:

- never associate the programme with their products;
- never influence the content of the programme;
- only communicate on the programme in internal or corporate communications.

This commitment reflects the private partners' willingness to participate in a series of practical activities that match their beliefs and values, and to disseminate messages that they wish to communicate to their customers. The public health issue of childhood obesity concerns the private partners. For this reason, they have decided to commit funds to this project without receiving any commercial or publicity benefit.

The partners realise that they are often considered part of the problem and wish to demonstrate –through Viasano– their willingness to be part of the solution.

The private partner involved in the Viasano programme is Ferrero.

> *"We are proud to support Viasano from the beginning. It is a collaborative and positive approach to prevent childhood overweight and obesity. Viasano is in line with our social responsibility".*
>
> *Véronique Squelart, Communication Manager, Ferrero.*

The Viasano programme is also supported by a number of institutional and scientific organisations that share the same values, provide moral support, invite the programme to advocate in symposia, quote the programme in their publications, etc.

Institutions	The Flemish Government
Scientific Associations	The Belgian Society of Paediatrics The Belgian Cardiology League The Belgian Associations of Dieticians (UPDLF and VBVD) The BASO (Belgian Association for the Study of Obesity) The Belgian Association for Doctors and Nutritionists (SBMN)
Association	EPODE International Network
Patients associations	The Belgian Associations of Diabetes

1.2. Activities

Several types of activities are organised throughout the year. Once a year, each city highlights a theme related to nutrition and physical activity.

Teachers of all levels receive pedagogical material that help them create interactive and playful workshops with their pupils.

Leaflets that are designed to provide families with advice and tips on how to eat better and move more are displayed in public areas (shops, local associations, etc.). Posters are displayed in strategic areas of the city carrying the primary message of that specific campaign.

Health professionals receive a newsletter keeping them informed of the programme and reminding them of the official recommendations related to the specific campaign.

Each participating city organises an annual Viasano week. The objective of this event is to encourage physical activity and to promote a healthy and balanced diet. Each city and their stakeholders organise several activities for the population.

Apart from those centrally coordinated actions, the cities organise several actions per year on physical activity or healthy eating: a breakfast in the schools, sports events, child congresses, vegetable gardens (Figure 1), etc.

Figure 1. Vegetable gardens

1.3. Evaluation of the programme

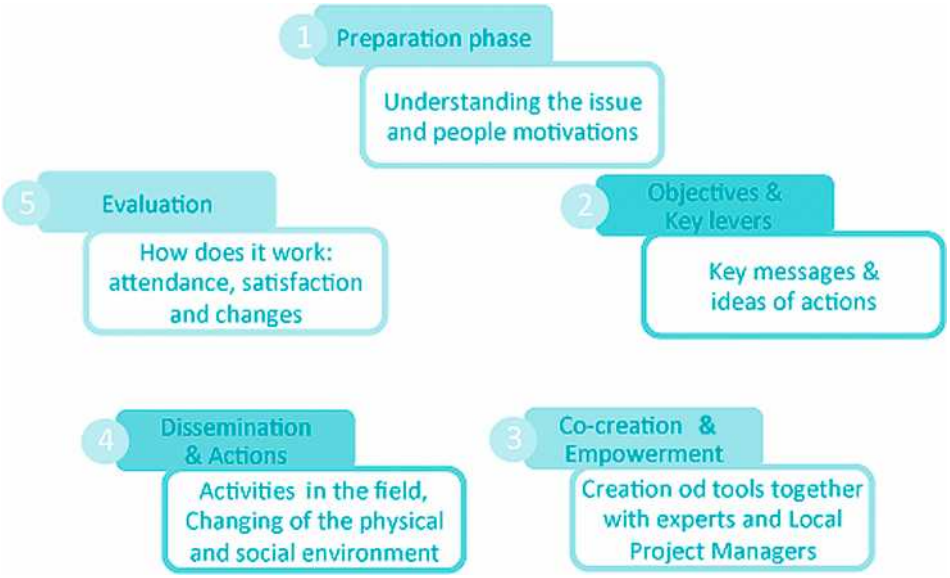
Viasano is not a scientific research programme.

Nevertheless, a number of indicators have been identified to evaluate the programme:

- the involvement of local stakeholders based on the frequency of meetings, the level of participation, the number and quality of activities;
- the communication material;
- the (local) media coverage;
- the evolution of childhood obesity and overweight in Viasano cities compared to reference cities, using BMI data recorded by school doctors in the respective school health systems.

→ First encouraging results have been described in the French speaking pilot towns Mouscron and Marche-en-Famenne over the period of 2007/2008 and 2009/2010: the prevalence of overweight (-2.1%) and overweight ξ obesity (-2.4%) decreased in the pilot towns but remained stable in the rest of the population (+0.1% and +0.2%, respectively).
These results have been published in *Pediatric Obesity* (Jan 2015)([1]).

2. Social Marketing Activities



The Viasano intervention campaigns are the product of a 5-step process.

2.1. Step 1: Preparation

The national coordination team and the Expert Committee perform this activity. The local project managers are also involved because they are both the actors and the target group of the campaign.

The first aim is to understand the cultural and psychosocial representations of the target group, including its needs and expectations.

For example, during the preparation of the last Viasano campaign on the lunch box, the local project managers filled out a questionnaire on their lunch habits:

- How many meals does the lunch box contain?
- Who completes the purchases? Who prepares the meals? For whom (children and/or parents)? When?
- What do you eat for lunch? Which bread-type?
- Did your children finish their lunch box?

The results were presented and discussed during a knowledge-sharing workshop. One of our experts presented the nutritional recommendations for lunch boxes, including snacks.

The national coordination team outlined the Belgian food habits and behaviours based on the Belgian HBSC Study 2010, and reminded the local project managers of the existing tools and the messages from previous campaigns on similar topics.

2.2. Step 2: Objectives and key levers

Objectives, main messages and tools are defined with the local project managers during a training session.

In the framework of the Lunch Box Campaign, once the different presentations were given, the local project managers were split in 4 groups to brainstorm, and then gathered in a group discussion.

The ideas and messages that came out of the different sessions are the baseline for the new campaign, after formal validation by the Expert Committee.

2.3. Step 3. Co-creation of tools and empowerment

The tools are created by the national coordination team and validated by the Expert Committee.

They are presented to the local managers and discussed. Optimisations can be completed before they are put online on the extranet.

2.4. Step 4. Dissemination of tools and actions

All tools are available on the extranet. It is the responsibility of the cities to print them with their respective logos and contact details.

2.5. Step 5. Evaluation

The evaluation of the tools, such as their effectiveness and use, is carried out during the yearly individual meeting in each town.

Material available on the Viasano extranet

The extranet assembles all the campaign material:

- information tools, such as a brochure, folders or a toolkit for activities and workshops for different target groups (children, families, employees...);
- activation tools, such as recipes, placemat, bookmark games, etc.

These documents exist in French and Dutch. The documents are customizable (add logo and contact details of the town) and ready to go to print (high definition files).

	Topic	Objective
Campaign 1	Physical activity (PA): 30' per day	Promotion of PA on a regular basis for the entire family
Campaign 2	Dairy products	Promote the variety of dairy products
Campaign 3	Move to work or school	Promotion of active commute
Campaign 4	Move in all weather	Promotion of PA in all circumstances
Campaign 5	Indulgence	Help to manage treats
Campaign 6	Meals	Promotion of family meals
Campaign 7	Screen time	Help to manage the amount of time the children spend watching screens
Campaign 8	Fats	Pay attention on hidden fats in food
Campaign 9	Sleep	Promotion of sleep quality for children
Campaign 10	Beverages	Promote water as a first choice beverage and help parents manage other beverages such as fruit juices and soft drinks
Campaign 11	PA: active play	Promotion of active play for children as a natural way to move
Campaign 12	Snacks	Promotion of good snacks at 10am
Campaign 13	Vegetables	Advice parents on how to get children to eat vegetables
Campaign 14	PA	Promote PA by play
Campaign 15	Lunch box	Promote a balanced and enjoyable lunch
Documents	PPP commitment charter, application to become a Viasano town	
Logos	Viasano logo, partners logo	
Viasano presentation	Regularly updated general presentation	
Tool kit press	Press kit, latest press release	
Q&A	Viasano in 8 questions & answers	

Innovative tools developed by the towns are also available for the network on the extranet.

Finally, the extranet provides supporting documents for the management of the campaign at local level: presentation of the programme, press kit, Q&A, etc.

3. EPHE Community

3.1. Choice of the city

In 2012, the town of Mouscron was chosen for three reasons. First, it is a large urban town with 56,000 inhabitants (the 8th town in the French-speaking region of Belgium in terms of density). Secondly, it is located in the poorer area, with more health inequalities due to socio-economic factors, as compared to the national wide average. Finally, Hainaut Province (in which belongs Mouscron) is where the prevalence of overweight children in the 6th grade is the highest.

	Hainaut province	French speaking region (Wallonia)	Belgium
Men's life expectancy (y.)	74	75,1	77,1
Women's life expectancy (y.)	81	81,5	82,6
Mortality (Walloon region = 100)	105	100	88,4
Premature mortality < 65 y (Walloon region = 100)	111,5	100	80,4
Unemployment rate total 2013 (%)	18,8	15,9	10,4
Subjective health % Good ξ very good (2008) (1)	69,7	73,7	76,8
Adult women % Sedentarity	48,7	38,8	30,1
Adult men % Sedentarity	22,5	29,3	22,5
Fruit consumption % (1)	58,8	60,4	64,3
Higher education % of the global population	25	28,4	30,7

Observatoire de la santé du Hainaut, (2013). Santé en Hainaut n° 8, Tableau de bord de la santé 2013.
(1)Scientific Institute of Public Health, Belgian Health Interview Survey 2008.

Beyond those reasons, Mouscron is also the French speaking pilot town, which has always been very motivated by Viasano and interventions that aim at improving inhabitants' health. A team including dieticians is very active and dedicated to the programme.

Brigitte Aubert "it is an honour to be part of the EPHE project! The fact that this project is international is very rewarding; this is a plus for the Viasano programme."

3.2. Population of the study

In line with the EPHE recommendations and evaluation framework, the EPHE project was implemented in 10 classes from 4 Belgian primary schools, totalling 195 children. The selection of the schools was based on the social diversity in its children constituents.

The age group –6 to 8 years old in the 1st grade– was selected in accordance with the scientific partners. The aim was to limit the amount of loss due to follow up when the classes were reorganised at the beginning of each year.

	Nb children 1st gr. 6/7 y. o.	Type	SES	Health promotion at school
Primary school 1	61	Public	Low	Viasano in 5th grade
Primary school 2	48	Catholic	Medium/High	Viasano in 5th grade + Sodexo food workshops
Primary school 3	68	Public	Medium	Viasano in 5th grade
Primary school 4	18	Public	Low	Viasano in 5th grade + school policy for snacks at 10 am + only water at lunch
Total	195			

Infrastructures at school

	Medical service for school	Canteen	Type of canteen	Dietician's approval of the menu	Water fountain
Primary school 1	yes	yes	private	yes	no
Primary school 2	yes	yes	private	yes	no
Primary school 3	yes	yes	private	yes	yes
Primary school 4	yes	yes	private	yes	yes

Infrastructures in school	Playground	Sports field	Sport hall	Compulsory physical activity	Possibility extra school PA
Primary school 1	yes	yes	no	yes	yes
Primary school 2	yes	no	yes	yes	no
Primary school 3	yes	yes	yes	yes	yes
Primary school 4	yes	no	no	yes	no

3.3. Local partners

Besides the schools, Viasano collaborated with a wide range of stakeholders, and worked with existing associations. The school staff (director, professors, canteen) were very collaborative, especially in public schools.

The EPHE team included other partners for specific activities or events, including associations, the police, local shopkeepers, etc. For example, the parental workshops, including a session on parenting skills, were organised with family planning. A neighbourhood party included participation of many associations and town services (sports, nurseries, youth, social affairs).

4. Interventions

4.1. The preparation step: from the end of 2012 to june 2013

In this first period, the focus was on preparing the community for the project implementation.

4.1.1. *Recruitment of Mouscron*

In December 2012, the national team chose the town and asked the Health deputy to represent Belgium in the EPHE project. The council of town representatives completed the approval at the end of January 2013.

4.1.2. *Briefing of the town*

In February 2013, the briefing was provided to the Health deputy and the Viasano local project managers: scientific background on health social inequities, objectives, population reached, methods, results expected, and resources.

4.1.3. *Recruitment of schools and information for parents*

From March to May 2013, the focus was on recruiting the schools and gaining support from the school directors, teachers, and parents. Three meetings per school were organised; one meeting per group.

The national coordination team helped the local team by making draft presentations, writing letters, and attending several of the meetings.

4.1.4. *Baseline questionnaire*

At the end of May 2013, the baseline questionnaire was distributed to the children together with motivational tools both for parents and the children. When children returned their completed questionnaire, they received a frisbee. On the directors' suggestion, parents received vouchers to buy fruit or school canteen free entrance.

4.2. The intervention step: september 2013 to june 2014

Three periods composed the intervention step:

4.2.1. *The schools' remobilisation after the summer break in September 2013*

At the beginning of the school year, a meeting with all the teachers from the 1st and 2nd grades was organised in the town hall in order to thank them for their collaboration and motivate the new teachers. The mayor invited the directors and teachers to a working lunch in the town hall's wedding room. The teachers could subscribe to workshops in their classes.

4.2.2. *The interventions before the results between October and December 2013*

Each EPHE class received 2 X 2 hours of workshops at school. After each workshop, parents received a letter explaining the activities, and informative Viasano folders.

1st workshop

- Vegetables: The aim was to help children go beyond the "I like/I dislike" habit. The pedagogical material was a funny video about a child who first thought that he did not like vegetables but finally discovered that he did. The local team chose the pedagogical tool.
- Fruit: The aim was to discover fruit in their variety: colour, texture, odour, taste. Pedagogical material: Viasano pedagogical tool around the discovering of 4 seasonal fruits.
- Water & beverages consumption: The aim was to discover the taste of water through different kinds of water: tap water, mineral water (still and sparkling). Pedagogical material: Viasano pedagogical tool with different waters.

2nd workshop

- Physical activity: The aim was to link moving and playing. Games were organised on the schoolyards. Pedagogical material: a Viasano folder with several simple collective games, distributed to every child.
- Sleep: The aim was to explain the role of sleep in a good environment. Pedagogical material: A Viasano game of snacks and ladders.

The interventions undertaken in the 10 EPHE classes, other Viasano interventions took place in some other classes of equal grade. The town also organised its Viasano Week, on which more then 50 activities were offered to everyone (children, employees, families, elderly, etc.) in various settings (schools, canteens, libraries, restaurants, companies, the town hall, shops, sports clubs, etc.).

Sophie Baelen

"The EPHE project allowed us to maintain a privileged contact with selected schools, and with the schools' leadership teams especially. We also had the opportunity to meet parents through the parenting workshops and the event "Healthy Tuquet". This neighborhood party raised so much enthusiasm amongst the population that a second edition was organised. We can confidently say that the EPHE project helped enhancing and valorising the Viasano programme at school as well as with parents."

4.2.3. *The interventions after the results from January to June 2014*

After the baseline results, new types of interventions were undertaken during the second period.

Baseline results:

Respondent	Income position	Labour status	Education
Behaviours to address	Fruit Soft drink Diet soft drink	Sleep hours week days	Water/Fruit juice Screen time
Determinants to address	Home availability/Parental allowance/Nagging behaviour		

New interventions:

A new 2-hour intervention was organised for each class on the following topics:

- Beverages (fruit juices, soft drinks and water):
  The aim was to evaluate the amount of lumps of sugar in different kinds of beverages in order to show that water is the only beverage to drink on an "ad libitum/limitless" basis.
  A link could be done with a physical activity (energy intake/energy expenditure). Viasano provided pedagogical material. The class received glasses and jars with the claim "Water ad libitum" as well as items such as a fruit cutter to facilitate the consumption of fruit in class.
- Physical activity:
  The aim was to experiment the effects of physical activity on the body. Children were asked to move: jump, run... in order to speak about what they felt: "I am hot, I get red, my legs hurt..." Then the sports instructor explained what changes occur in the heart, the lungs, the muscles... and the role of physical activity. Viasano provided a pedagogical tool: each EPHE class received a box of games for the playground (a soccer- or basketball, a skipping rope...), and each child received a security jacket (Figure 2).
  Currently, an equipment project with sports structures for an underprivileged neighbourhood adjacent to an EPHE school is on-going.

Figure 2. Box "Playing is already moving" with physical activity games for each class in EPHE project

- Parenting workshops:
  They were organised in 3 schools out of 4, which means 7 classes out of 10. EPHE results have shown that parental attitude is a key determinant in child behaviours related to food, beverages, screen time and sleep habits. In the low socio-economic group, we could notice less parental control, less ability to negotiate with their child, difficulties to set a good example...
  The town was asked to organise parental workshops in all 4 schools involved. The aim was to help parents improve their parenting skills by organising discussions.
  A game was created; the town's family planning was the moderator.

  Virginie Ooge: "Being able to study the same children for two years was very rewarding. Indeed, the systematic evaluation of our actions allowed us to identify the activities and methods that had the greatest impact on their behaviour. A true added value for our future Viasano actions."

4.3. The observation step from september 2014 to june 2015

In September 2014, the town organised a new meeting with all the directors and teachers (from grades 1, 2 and 3) in order to explain the last stage of the project: the involvement of the EPHE classes during the next 3 months in all Viasano activities, e.g. workshops on snacks, with new Viasano material.

On 22 May, 200 children involved in the EPHE project took part in sports activities all day long, and were offered a healthy lunch.

5. Remarkable Activities

Xavier Lepoivre: "*In partnership with the EPHE project, we have remodelled the play-ground of a working-class neighborhood with new swings, ping-pong tables, and picnic tables, thus creating a user-friendly and intergenerational space.*»

The EPHE project has represented a great opportunity of creating new ways of collaborating with the town through various actions, events, and new experiences such as parenting workshops.

5.1. Parenting workshops

The steps from "idea" to "action" were the following:

Inform the school directors and teachers

First, the project was presented to the EPHE school staffs in order to ensure their collaboration in mobilising parents. It was also decided to organise a parental workshop in each school, to invite parents to a lunch or breakfast, and to organise a raffle to heighten their participation. The parents had the opportunity to come with their children. The sports instructors took care of the children.

Benchmark the tools, identify the moderators

The Viasano national coordination team provided existing tools on the topic, and experience on this kind of activity. In addition, the local team identified family planning members with good moderating skills and an experience in group discussions. Both the local team and family planning created a game.

Organise the workshops

Local teams and schools conducted the workshops. The mayor and the Health deputy invited parents involved in the project. Depending on the school, a buffet or a breakfast was offered before or after the group discussion.

The group discussion was based on a game. One parent turned a wheel, which stopped on a colour. The colour determined the topic of the question. There were 4 topics:

- Food & Beverages;
- Screens;
- Communication & Respect;
- Violence and Authority.

Each question gave the opportunity to explain one's behaviour, to share experience without stigmatisation. The moderators and local teams could add information and recommendations.

Example of question (Food & Beverages): "*Elliot, 8 years old, does not want to eat vegetables. What would you do?:*

1. *I ask him to taste before saying no.*
2. *I force him to finish his plate.*
3. *I prepare pasta instead, because he likes it.*
4. *I explain that it is important to eat all kind of food to grow.*
5. *I remove his plate and I will give it again at the next meal."*

Example of question (Violence & Authority): *"As soon as my child comes back from school, he watches TV. It can last for hours. What can I do?:*

1. *I let him do what he wants. It is a way to avoid conflicts.*
2. *TV is forbidden during the week.*
3. *I plan with him his time: snack after school, then homework and then TV or another activity."*

5.2. Results

Even if it was a time consuming action and only parents from 7 classes out of 10 attended the workshops, the groups were very useful for parents. People were very interested and active in the discussions.

The motivation tools such as the buffet and the raffle were key elements to heighten their participation.

The Viasano national coordination team provided methodology, documents and support at each step of the project:

- knowledge on social inequities to the local teams and the school staffs. Each stage of the project was presented and discussed (with results on the baseline and following questionnaires);
- attendance to key meetings with school staffs, or to key events such as the neighbourhood party in Le Tuquet;
- presentation writing for the local teams;
- an assistance with contacting people: writing invitation letters, thank-you letters, information letters, etc.;
- advice in organising a working meeting with a healthy buffet, etc.

Beyond the knowledge-brokerage process, the project was also a co-creation process. Each step was discussed between the local and national teams. The school staffs and other local actors were also associated. For example, the motivational tools were discussed with the directors.

For all these reasons, the teams' and project partners' motivation remained elevated throughout the whole project.

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Part 3

Evaluation Framework and Results

Chapter 12

Description of the Evaluation Framework

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The publication related to this chapter is free and available on our website: ephestory.eu

EPODE for the Promotion of Health Equity's overall objective is to analyse the added value of community-based approaches based on the EPODE methodology (1, 2) in order to reduce inequities associated to childhood obesity and related determinants. Based on scientific evidence (3-6), four energy-balance related behaviours were addressed by the EPHE interventions: promotion of fruit and vegetables intake, tap water intake, active lifestyle and adequate sleep duration. The project involved seven different community-based programmes based on the EPODE methodology across Europe, and was guided by the EPHE Scientific Advisory Board composed of representatives from 6 European Universities. Based on the results of the baseline survey, the interventions focused on the energy balance-related behaviours and their associated family-environmental determinants whenever there was a difference between the high and the low socio-economic groups.

The EPHE evaluation study aims:

- to explore and identify inequalities in selected Energy Balance Related Behaviours (EBRB) and related environmental determinants, which are associated with childhood obesity and overweight;
- to provide evidence-based results concerning the inequalities in childhood obesity and overweight across 7 European countries.
- to assess the effectiveness of EPODE methodology to tackle inequalities in obesity and overweight;
- to assess the sustainability of potential effects, a year after the termination of the interventions;

The evaluation of the EPHE project and the outcomes are presented in the next chapter.

1. Methods/Design

The EPHE evaluation study consisted of a prospective two-year follow-up study design. It assessed the behavioural change and its sustainability in selected energy balance-related behaviours and related family-environmental determinants in children, according to their socio-economic status. The evaluation study was performed on 3 measurement periods: on the baseline survey (May-June 2013), after the end of the EPHE interventions (May-June 2014), and one year later (May-June 2015). The study included self-reported only measurements through a parental questionnaire.

In the framework of the survey, a formal declaration from the Medical Ethics Committee of the VU University Medical Centre was obtained, that it does not fall under the scope of the Medical Sciences People Research Act (WMO). In addition, permission to research in schools was acquired from local community and/or school authorities, when necessary.

1.1. Description of selected cities

This cities were selected by the national coordination team. All countries are represented by one city, with the exceptions of France and Bulgaria, where two cities participated in the project.

All cities are considered medium-sized for the country-specific standards. Except for France, the selected cities are located in urbanised areas. In Bulgaria, Greece and Portugal's cases, the cities belonged to the metropolitan areas of the big cities, contrary to the rest of the EPHE-cities. Mouscron (Belgium) is positioned in the west of Belgium, in the French speaking part close to the French border. The towns of Triaditsa and Studenski (Bulgaria) belong to the metropolitan area of the capital city Sofia, located in the west of Bulgaria. Flandres-Lys Community of towns (CCFL)

is located in the north of France. Marousi town (Greece) is part of the metropolitan area of the capital city Athens, positioned in the centre of Greece. Maia city (Portugal) is situated to the north of Porto city, in the north of Portugal. Otopeni (Romania) is located in the south of Romania, 15 kilometres north of the capital, Bucharest. Zwolle (The Netherlands) is positioned in the north of the Netherlands, 12 kilometres north-east of Amsterdam.

Three out of the nine participant municipalities began the implementation of the EPODE methodology during the first year of the EPHE Project, whereas the other six were already committed to an EPODE-like programme. Health campaigns launched by programmes other than those that are EPODE-like, are taking place in the majority of the engaged municipalities. However, these do not always overlap with the target group or the themes of EPHE.

1.2. Sampling and recruitment

We aimed at recruiting at least 150 families with children aged between 6 and 9 in every selected city/town with a similar variation regarding age and ethnicity per site, and a preferably low number of different ethnicities (other than the local) per site.

The families were approached through schools. Every national coordination team and local team were in charge of engaging teachers in the selected schools to enable the distribution and collection of the questionnaires. Teachers, acting as mediators, approached the families. The national coordination teams and local project managers of every country were responsible for engaging and guiding school directors and teachers in order to recruit the participants. Parents were provided with an informed consent form, describing the purpose of the study.

School selection

One major point was to account for the variability of the socio-economic status and ethnicity of the sample population, both within and between communities. For that reason, the schools were selected from different neighbourhoods of both higher and lower socio-economic statuses.

1.3. Socio-economic and demographic assessment

Education, social class and income are the most commonly used indicators to assess the socio-economic status in nutritional research (7). In this study the educational level, the employment status and the income position were used in order to distinguish the socio-economic status of the parents. Given the current economic instability of the European Union, employment status was assessed instead of the social class. As it is difficult for some countries to evaluate or to obtain quality data, we used the concept of perceived income position, asking parents to self-report their current financial status.

Table 1. Socio-demographic characteristics of the EPHE population per country.

Country	Total n	Gender		Age child (years)	Age of mother [a]		Income position [b]		Employment status mother		Educational level mother	
		Boys (%)	Girls (%)	Mean (SD)	< 30 (%)	> 30 (%)	High (%)	Low (%)	Employed (%)	Not employed (%)	High (%)	Low (%)
Belgium	196	53.4	45.4	6.58 (0.55)	21.4	77.9	88.8	11.2	64.8	24.5	42.7	57.3
Bulgaria	205	46.8	52.7	7.97 (0.78)	8.7	90.1	81.8	18.2	84.1	15.9	74.3	25.7
France	160	38.8	57.5	6.34 (0.55)	30.9	69.1	79.6	20.4	53.5	46.5	35.2	64.8
Greece	159	46.5	45.9	7.37 (0.66)	3.2	94.4	51.0	49.0	61.5	38.5	52.8	47.2
Portugal	241	51.0	48.5	6.85 (0.74)	12.4	87.1	55.8	44.2	73.8	26.2	46.0	54.0
Romania	176	56.8	43.2	7.39 (0.54)	17.7	82.3	75.9	24.1	78.0	22.0	53.8	46.2
The Netherlands	129	47.3	52.7	7.83 (0.98)	6.5	90.7	87.9	12.1	76.8	21.4	61.3	38.7
Total	1,266	49.8	49.2	7.17 (0.90)	14.6	84.4	73.6	26.4	72.5	27.5	52.7	47.3

[a] The analysis includes the age of the mother only when the mother was the respondent; the age of the second parent was not assessed. Response categories: 1 = Below 20; 2 = 21-24; 3 = 25-30; 4 = 31-35; 5 = 36-40; 7 = above 40. Number of subjects included in "age of mother" per country: Belgium = 148; Bulgaria = 171; France = 136; Greece = 128; Portugal = 208; Romania = 147; The Netherlands = 107; Total = 1,038.
[b] Income position categories: (1) Living comfortably on present income (2) Coping on present income (3) Finding it difficult on present income (4) Finding it very difficult on present income. Income position was defined as "high" when the response was (1) or (2) and "low" when the response was (3) or (4).

The food security level of the household was also assessed (8).

Two socio-economic groups were distinguished, based on the classification for each indicator assessed: "mother's and father's employment status" (employed/not employed), "income position" (good/not good), "mother's and father's educational level" (low/high). The aforementioned variables are described in detail by Mantziki et al. (8). The subdivision into two socio-economic groups was very unequal when based on employment status and income position for the majority of the samples (Table 1). In addition, knowing that educational level has been classified as a good social factor that explains differences in nutritional outcomes (9-11), for the current article, the samples were divided into two groups based on the "educational level of the mother" (low/high). For each country's sample, the median of the educational level was used as the cut-off point to determine the educational level of the mother (low/high).

1.4. Development of questionnaire

A self-reported questionnaire was developed, with questions addressed to the parents. The questionnaire assessed information relevant to:

- the family's socio-economic status and household's food security level;
- the child's energy balance-related behaviours and associated environmental determinants;
- the parental perception of a healthy body of a child.

The EPHE parental questionnaire was developed using items from relevant, validated questionnaires addressed within European populations. Items derived from questionnaires of large European socio-economic surveys (12, 13) were chosen to define the socio-economic status. For the assessment of the energy balance-related behaviours and their environmental determinants, items from the ENERGY Parent and Child questionnaires (14), the Pro-children child questionnaire (15) and its updated version, PRO-GREENS (16), were used. These tools have been translated (15, 17) into several European languages, including some that were of interest to us, and validated. Items with intraclass correlation coefficient (ICC) classified as "poor" (ICC < 0.5) were excluded (15, 17). Concerning the household food security level, a short form of the household food security scale developed by the United States Department of Agriculture (18) was used. In order to assess the parents' perception of their child's body weight, the pictorial instrument and related questions developed by Collins (19) were used. All items derived from validated questionnaires were adapted to the needs of the EPHE parental questionnaire, when necessary. Additional items were constructed whenever no validated items or questionnaires existed to our knowledge.

The questionnaire was translated into the language of each participant country, and back-translated into English. It was mandatory for all participant countries to use the same version, layout and format of questionnaire. The EPHE questionnaire is available on our website.

1.5. Measures

A total number of 105 items are included in the EPHE parental questionnaire. The average time to fill it out is approximately 45 minutes.

1.5.1. *Descriptive and socio-economic variables*

The descriptive and socio-economic information are assessed by ten items. The descriptive information include the age and gender of both the parents and child. In addition, the size of the household is assessed by two items. To assess the socio-economic status, the years of education, labour status and type of working sector of both parents were asked, as well as the perception regarding the household income, in order to assess its main source, given ethical restrictions to ask for the exact household income. The 6-item USDA questionnaire was used to examine the food security level of the household over the past year (18).

Socio-demographic characteristics (Table 1) were measured in:

- Likert-type scales:
  - age of the respondent: 1. 20 and below / 6. 41 and above;
  - age of the child: 1. 6 years old / 4. 9 years old and above;
  - parental education level: 1. Less than 6 years / 6. More than 17 years;
  - perception of income: 1. Living comfortable in the present income / 4. Finding it difficult in present income);
- an 8-category scale:
  - labour status;
  - source of income
- a 6-category scale – sector of employment.

1.5.2. *Energy-balance related behaviours*

Eighteen questionnaire items assess the four energy-balance related behaviours of the child:

- fruit and vegetables consumption;
- soft drinks/fruit juices and water consumption;
- screen time;
- sleep duration.

Another 62 questionnaire items assess the determinants related to the social and physical environment of the child, within the family setting. In order to keep the length of the questionnaire within acceptable limits, we had to prioritise the many aspects of behaviour that could be relevant. The Scientific Committee decided (in consultation with the experts) to keep sedentary behaviour as the indicator of physical activity. Other relevant aspects which were not included were snacks and meals (breakfast, lunch and dinner), and consumption of energy-dense food. For more information, please see the additional files of the publication available on our website.

The consumption of fruit and vegetables is assessed by food frequency questions, referring to a usual week, and measured in an 8-point Likert scale (1. Never / 8. Every day, more than twice a day) (20). The consumption of fruit juices, soft drinks and diet soft drinks is measured in weekly frequency and consumed amount. The frequency is measured in a 7-point Likert scale (1. Never / 7. Every day, more than once a day) (21). The amount is measured by 2 items for fruit juices, and 3 items for soft and diet soft drinks, assessing how many glasses (or small bottles of 250 ml), cans (330 ml) or big bottles (500 ml) the children usually drink (21). The amount is calculated by summing the portions. In order to measure water consumption, 2 questions were constructed to measure the daily frequency (1. Never / 7. More than 6 times a day) and number of glasses consumed when drinking water (1. None / 6. 5 or more glasses). Sedentary behaviour is assessed by means of daily time spent in television (TV) viewing and computer (PC) using, both during the week and on weekends, separately. They were measured in a 9-point Likert scale (1. Not at all / 9. 4 or more hours a day) (21). The total screen time was calculated by the sum of weekly (hours per weekday*5+hours per weekend day*2) TV and PC use. Furthermore, 2 questions informed by the ENERGY Parent questionnaire assess the sleeping habits of the child (1. Sleeping routine; 2. Sleep duration per week-/weekend-day) (21).

1.5.3. *Assessment of family-environmental determinants*

All family environmental variables were assessed by one or two items, using a five response category format. Depending on the item the response categories range

a. -(+2) I fully disagree I fully agree,
b. -(4) never to (yes) always,
c. -(4) never to every day.

Exemptions are the variables assessing the situation of specific habit and the TV availability, where binary response categories are used (i.e. 1.yes, 2. no) (8).

The social environmental determinants were, for fruit and vegetables consumption, parental demand, parental permissiveness, active encouragement, the facilitating and the parental knowledge on recommendations (16, 22); for fruit juice\soft drink consumption and TV viewing\computer time, it was paying attention\monitoring, parental permissiveness, negotiating, communicating health beliefs to avoid negative modelling; the parental self-efficacy to manage child's intake; and rewarding\comforting practice (22). The physical environmental determinants were the home availability and the situation specific habit.

1.6. Data collection

In order to ensure the confidentiality of the data, a process to warrant the anonymity was applied. Each city/town received the edited questionnaires labelled with the country's abbreviation and a three-digit code, indicating the subject's number. This number corresponded to the family's surname, indicated in a document kept by each

country's national coordination team. As such, only the national coordination team was aware of the subject's identity, for follow-up purposes. Once filled out, the questionnaires were returned sealed in a provided envelope. The parents were informed in advance of the process of confidentiality through an information letter included in the informed consent form. Only the children who had returned the informed consent form indicating their parents' agreement would participate in the study.

The questionnaires were distributed through schools. More specifically, the teachers were provided with the labelled questionnaires and envelopes, which were disseminated by them to the participating children in the class. Following this distribution, the children gave the questionnaires to their parents. The number of distributed questionnaires was noted down, in order to monitor the response rates after the collection.

Similarly, after a specified period of one to two weeks, the questionnaires were returned to the teachers. Finally the local project managers were responsible for collecting the returned questionnaires and deliver them to their national coordination team. Every national coordination team kept at least one hard copy of each document, for safety reasons. As mentioned earlier, each local University has access to their national data.

1.7. Data handling

The questionnaires from all countries were shipped to the coordinating University in the Netherlands (Vrije University of Amsterdam), where the general analyses were conducted. A scanned process from the same scanning company facilitated the data transfer into SPSS files, for all three stages of the evaluation. All the national data are available to the national participant University and country for further analysis.

Statistical analysis

The total sample analyses included all subjects from all communities. Due to minor discrepancies between the translated versions of the questionnaire –i.e. missing response categories in certain items–, minor adaptations in the response categories were made when necessary.

The Mann-Whitney U test for the ordinal variables and Pearson's chi-square test for the binary variables were used to detect differences in behaviours and determinants between the two socio-economic groups. The Wilcoxon signed-rank test for the ordinal and the McNemar's test for the binomial were used to detect differences in energy-balance related behaviours and determinants between the follow-up measurements within the low and within the high education groups. Here, we present medians and quartile ranges (Mann-Whitney U test and Wilcoxon signed-rank test), as well as percentages (Pearson's chi-square) in order to illustrate the differences between the two groups. Knowing that the mean ranks produced by non-parametric tests are not always sufficiently informative, and that differences in spread may be as equally important as differences in medians (23), further assessment of frequencies

and distributions per item was explored. The results of the additional assessments are discussed in the article, but not presented for practical reasons.

Adjustment for multiple testing was conducted using the Benjamini and Hochberg method (24), using the Stata software 13 (StataCorp. 2013. *Stata Statistical Software: Release 13*. College Station, TX: StataCorp LP).

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Chapter 13

Baseline and Impact Results

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1. Baseline results

A total of 1266 children and their families were included in the EPHE evaluation study. In all samples boys and girls represented almost 50% each and the average age of the participant children was 7 (SD:0.9) years old. The response rate was more than 85% in all countries, excluding the Netherlands where the response rate was 65%.

Given the large variation of identified differences per country, we focus on discussing the statistically significant differences in the samples.

1.1. Inequalities in energy balance-related behaviours

Children of the high education groups consumed fruit significantly more frequently during the week than their peers from the low education group. Vegetable consumption was also higher for the high education group in some countries (table 1).

Table 1. Inequity gaps in energy balance-related behaviours at baseline (T_0) per country.

Country / Behaviour component	Belgium	Bulgaria	France	Greece	Portugal	Romania	The Netherlands
Dietary intake							
Fruit consumption	–	–	–	–	+	+	+
Cooked vegetables consumption	–	–	–	–	+	+	–
Salad/grated vegetables consumption	–	–	–	–	+	–	–
Fluid intake							
Water consumption	–	–	–	–	–	–	–
Fruit juices frequency (weekly)	–	–	–	–	–	+	–
Fruit juices amount (ml)	+	+	–	–	–	+	+
Soft drinks frequency (weekly)	–	–	–	–	+	+	–
Soft drinks amount (ml)	–	–	–	–	+	+	–
Screen exposure							
TV watching week days (h/day)	+	–	+	+	+	+	–
TV watching weekend days (h/day)	+	–	+	–	+	–	–
Computer playing week days (h/day)	+	+	–	–	–	–	–
Computer playing weekend days (h/day)	+	+	–	–	–	+	–
Total screen time (weekly)	+	+	+	+	+	–	–
Sleep							
Sleep hours week days	–	–	–	–	+	+	+
Sleep hours weekend days	–	–	–	–	–	–	+

+: Identified inequity between low and high education groups
–: No inequity identified between low and high education groups

With regard to fruit juices and soft drinks consumption, differences between the high and low education groups were observed mainly in the amount consumed (table 1). Children with mothers of low education in all countries were more likely to have a higher amount (in ml) of intake when they drank fruit juices/soft drinks; though statistical significance varied at country-level and was not found in all countries. With regard to the frequency of drinking fruit juices it was observed that in most of the communities it was higher in the low education group, although the difference was significant only for one community. Water consumption frequency was significantly higher for the low education group in two of the communities, whereas no difference was found in the rest of them (table 1).

Furthermore, for the children of the low education group in all countries higher amounts of screen time were reported, with a statistically significant difference between the two groups in the majority of the participant countries. A noteworthy finding is the amount of time spent watching TV during the week, which was higher for the low education group in all countries and the difference with the high education group reached statistical significance in almost all countries. Similar were the differences regarding the time spent watching TV in weekend days, reaching statistical significance in some of the samples (table 2). Computer time was significantly higher for the low education group in a few samples during weekdays and weekend days as well. There was also disparity between the groups in terms of sleep duration in two countries, indicating that children of the high education group were sleeping more hours.

1.2. Inequalities in determinants of dietary intake

All results of inequity gaos between low and high education groups in determinants are reported in table 2.

1.2.1. *Social environment*

In some of the communities parental practices related to fruit and vegetable consumption differed significantly between the low and high education groups, indicating that the high education groups had better practices. Specifically, high educated parents asked their child more frequently to eat fruit (parental demand), allowed their child to consume fruit and vegetables more often and cut-up/served fruit and vegetables more often than the low educated parents. Differences in other social environmental determinants (eating fruit/vegetables together with the child, parental knowledge on recommendations) were rare.

1.2.2. *Physical environment*

The availability of fruit and/or vegetables at home was more frequent reported by parents of the high education group of most countries, although statistical significance was reached for only some of them. On the other hand, having the habit of eating vegetables daily differed between low and high education groups only in one country.

Table 2. Inequity gaps between low- and high-education groups in determinants –related to the four EPHE themes– of the social and physical environment of the child for each country, in a nutshell.

Country	Significant Inequity gaps at T_0 per behaviour		
	Dietary intake	**Fluid intake**	**Screen exposure**
Belgium	*Fruit consumption* • **Availability** of fruit at home	*Fruit juices consumption* • **Parental allowing** for consuming fruit juices	*TV exposure* • TV **available** in child's bedroom • Having **TV on** during mealtime • **Monitoring** the time the child watches • TV Parents **watching** TV **together** with the child *PC exposure* • Child **nagging** when computer playing is forbidden • **Parents playing** computer games/**using** computer **together** with the child
Bulgaria	*Fruit consumption* • **Allowing** fruit consumption	*Soft drinks consumption* • **Availability** of soft drinks at home	*TV exposure* • TV **available** in child's bedroom *PC exposure* • **Parents playing** computer games/**using** computer **together** with the child
France		*Fruit juices consumption* • Child **nagging** when drinking fruit juices is forbidden • Parental **efficacy** to **retain rules** related to child's intake *Soft drinks consumption* • Child **nagging** when drinking soft drinks is forbidden	*TV exposure* • **Negotiate** for allowed time to watch TV • Parents **watching** TV **together** with the child *PC exposure* • Child **nagging** when computer playing is forbidden

Country	Significant Inequity gaps at T_0 per behaviour		
Greece	*Fruit consumption* • **Habit** to eat fruit every day *Vegetable consumption* • Parental **knowledge** on vegetable **recommendations**	*Fruit juices consumption* • **Negotiating** about the amount of fruit juices the child is allowed to drink	*TV exposure* • Having **TV on** during mealtime • **Parental efficacy** to forbid TV watching
Portugal	*Fruit consumption* • Fruit **availability** at home • **Eat** fruit **together** with the child *Vegetable consumption* • Parental **knowledge** on **vegetable** recommendations • Parental **allowance** to eat vegetables • **Facilitating** vegetable consumption • Vegetable **availability** at home	*Fruit juices consumption* • Giving fruit juices as **reward** or to **comfort** child *Soft drinks consumption* • Communicating **health belief** regarding soft drinks consumption • **Availability** of soft drinks at home • **Drinking** soft drinks **together** with the child • Child **nagging** when drinking soft drinks is forbidden	*Screen exposure* • Parental **allowance** for TV watching • **Reward** child by allowing TV watching • Child **nagging** for TV • TV **available** in child's bedroom • Having **TV on** during mealtime
Romania	*Fruit consumption* • **Facilitating** fruit consumption • Fruit **availability** at home *Vegetable consumption* • Vegetable **facilitation** • Vegetable **availability** at home	*Fruit juices consumption* • **Monitoring** child's fruit juice consumption • Parental **efficacy** to forbid fruit juices consumption *Soft drinks consumption* • Parental **allowance** for soft drinks consumption • Avoid **drinking** soft drinks in **presence** of child • **Drinking** soft drinks **together** with child • Soft drinks **availability** at home	*TV exposure* • **Watching** TV **together** with the child • TV **available** in child's bedroom • Parental **allowance** for TV watching • **Negotiating** for the time allowed to watch TV *PC exposure* • **Negotiating** for the time allowed to use the computer/play computer games

Country	Significant Inequity gaps at T_0 per behaviour		
The Netherlands [a]	*Fruit consumption* • Parental **demand** for fruit consumption *Vegetable consumption* • **Facilitating** vegetable consumption • **Habit** to eat vegetables every day	*Fruit juices consumption* • Parental **efficacy** to forbid fruit juices consumption • Giving fruit juices as **reward** or to **comfort** the child • Child **nagging** when fruit juices consumption is forbidden	*TV exposure* • TV **available** in the child's bedroom • **Monitoring** the **time** child is watching TV • Parental **allowance** for TV watching • **Avoid watching TV** in presence of the child *PC exposure* • **Negotiate** about the allowed time of computer playing • Parent **avoiding to use computer/playing computer games** in presence of the child

1.3. Inequalities in determinants of fluid intake

1.3.1. *Social environment*

In all the samples there were parental rules related to fruit juices/soft drinks consumption that differed significantly between the low and high education groups, indicating stronger rules for the high education groups. Referring to other social environmental determinants, higher frequency of trying to drink fruit juices/soft drinks when intake was prohibited (nagging) was reported for children of low educated mothers, while low educated mothers were drinking soft drinks together with their child (perform energy-balance related behaviour together) more often than the highly educated ones.

1.3.2. *Physical environment*

Availability of soft drinks at home was more frequent for the children of the low educated groups. The differences between the low and high education groups with regard to the situations of habitual intake for fruit juices, soft drinks and water were scattered across the countries (additional file).

1.4. Inequalities in determinants of screen exposure

1.4.1. *Social environment*

Parental rules related to TV and computer exposure differed commonly between the two education groups in nearly all countries, illustrating better efficiency of the high educated parents. The low educated mothers seemed to negotiate more often the time allowed spending in screens, to allow screen occupations more often and

to monitor the time their child spends in TV less frequently compared to the high educated mothers. Furthermore, the majority of the low educated groups reported watching television with their children more frequently than the respective high educated groups, although statistical significance was not reached in all the samples. Moreover, children from the low education group were more likely to try playing computer games when it was forbidden (nagging), compared to their peers form the high education group. Finally, parents with low education reported playing computer games together with their child more frequently than the ones with high education.

1.4.2. *Physical environment*

The majority of low education groups, reported having the television on during meal time significantly more frequently than the high education group. More children of low educated mothers had television in their bedroom than their peers of highly educated mothers. This difference was significant in almost all countries (ad. File 5).

1.5. Results after multiple testing adjustments

Adjustments for multiple testing resulted in critical p-values lower than 0.05, as initially set by the authors. Consequently, less of the differences found within the education groups of each of the samples (based on α=0.05) were significant based on the adjusted lower threshold. As an illustration, the statistically significant differences between the two groups in the total sample analysis were initially 44 and after the adjustments these were 41. These results are available in the additional file 6 attached to the publication.

2. Interventions tailored to the needs of the low socio economic groups

Based on the baseline measurements, the EPHE communities developed community-based interventions tailored to the needs of their low socio-economic group. These interventions are described in the previous chapters describing all the programmes involved.

3. Results after the interventions and a year after

A total of 1061 children and their families were followed-up in the intermediate (T_1) and 921 in the final measurements (T_2). The overall loss to follow-up per country at T_1 ranged from 1% to 50%, whereas it increased at T2 (ranging from 15% to 46.5%). Table x illustrates the dropout per education group, which was higher in the low education in nearly all countries in both follow-up periods.

At this stage of the EPHE evaluation study the aim was to assess whether there were improvements within the low and within the high education groups after the EPHE

interventions and if the potential improvements were maintained after a year after the interventions. Therefore changes between baseline (T_0) and the time after the interventions were assessed within each of the low and high education groups, in the variables where inequality gaps were identified at baseline. Finally, the identified changes were assessed for their sustainability by comparing the measurements at T_1 with the ones at T_2.

Given the large amount of data, here the statistically significant changes within the groups are presented and discussed.

3.1. Changes in energy balance-related behaviours

Changes in behaviours related to inequality gaps as identified at baseline within both the low and the high educational groups were observed, although they were small and often not significant.

More specifically, fruit frequency increased significantly within the Dutch low education group (table 3), reaching the same frequency as the high education group. Similarly fruit juices' amount decreased significantly within the Romanian low education group (table 4), despite the small difference observed. Moreover computer time both during weekdays and during weekend days increased significantly within the Bulgarian high education group, resulting in higher screen exposure during the week. In the Romanian sample, computer time during weekends increased as well, however within the low education (table 3). A notable finding was the decreased TV time during week days among the participants of the Belgian low education group (table 3), which was sustained a year after the interventions (table 5).

Table 3. Changes in energy balance-related behaviours from T_0 to T_1 within levels of education per country.

Country	Variable	Education group	Direction of change
Belgium	TV time on weekdays (h/day)	High	↑
Bulgaria	Computer time on weekend days (h/day)	High	↑
	Total screen time	High	↑
	Computer time on weekdays (h/day)	High	↑
Romania	Fruit juices amount (ml)	Low	↓
	Computer time on weekend days (h/day)	Low	↑
The Netherlands	Fruit consumption	Low	↑

*Non-presented results showed no changes related to the inequity gaps identified at baseline.

Table 4. Changes in determinants of energy balance-related behaviours from T_0 to T_1 within levels of education per country.

Country	Variable	Education group	Direction of change
Belgium	Parental allowance for fruit juices drinking	Low	↓
	Monitoring child's TV exposure	Low	↑
France	Child nagging to drink soft drinks	High	↑
	Parental negotiation for allowed time of TV watching	High	↑
Greece	Parental negotiation for allowed amount of consuming fruit juices	Low	↓
	Parental efficacy to manage child's TV exposure	Low	↑
Romania	Parents watching TV together with child	High	↓
	Avoid drinking soft drinks in child's presence	Low	↓
Portugal	Rewarding/comforting child by giving fruit juices	Low	↓
	Soft drinks availability at home	Low	↓
	Parental allowance for TV watching	Low	↓
The Netherlands	Avoid using the computer in child's presence	Low	↓

*Non-presented results showed no changes related to the inequity gaps identified at baseline.

Table 5. Sustainability of improved energy balance-related behaviours from T_1 to T_2 within the low-education groups per country.

Country	Variable	Sustained improvement Yes/No
Belgium	TV time on weekdays (h/day)	Yes
Romania	Fruit juices amount (ml)	No
The Netherlands	Fruit consumption (weekly frequency)	No[a]

*Non-presented results showed no changes related to the inequity gaps identified at baseline.
[a] The decrease in fruit consumption between T_1 and T_2 was not statistically significant; the statistical power of the test was very low.

3.2. Changes in determinants of energy balance-related behaviours

Similarly to the behavioural changes, we found a few significant changes related to inequality gaps identified at baseline in the determinants of the assessed behaviours, within the low and within the high education groups in all countries.

In particular, parental practices related to fruit juices consumption noted improvement within the low education group in Belgium, Greece and Portugal (table 4). The latter one was sustained a year after the interventions (table 6). For the determinants of soft drinks consumption the observed effects were mixed (table 4). A worth mentioning change in Portugal showed decreased home availability among the low education group; this decrease was maintained at T2 (table 6).

More changes in determinants of screen exposure were observed. More specifically, parental practices and rules improved within the low education groups, with exemption the negative modelling of Dutch low educated mothers for using the computer (table 4). As shown in table 6, some of those changes within the low education group were sustained a year after the EPHE interventions.

Table 6. Sustainability of improved determinants from T_1 to T_2 within the low-education groups per country.

Country	Variable	Sustained improvement Yes/No
Belgium	Parental allowance for fruit juices drinking	No[a]
	Monitoring child's TV exposure	Yes
Greece	Parental negotiation for allowed amount of consuming fruit juices	No
	Parental efficacy to manage child's TV exposure	Yes
	Rewarding/comforting child by giving fruit juices	Yes
Portugal	Soft drinks availability at home	Yes
	Parental allowance for TV watching	No[a]
The Netherlands	Avoid using the computer in child's presence	Yes[b]

*Non-presented results showed no changes related to the inequity gaps identified at baseline.
[a] The change between T_1 and T_2 was small and not statistically significant.
[b] Low statistical power of the test.

4. Discussion

4.1. Before interventions

The EPHE evaluation study showed that children from seven European communities of relatively high socio-economic status consumed fruits and/or vegetables more frequently than their peers of low socio-economic status. In addition, the latter group of children had a higher intake of fruit juices and/or soft drinks and had higher screen time. It is important to note that increased screen time found among children from lower socio-economic status is attributed to television watching, rather than computer activity. Similarly, important differences between the two socio-economic groups were observed in the determinants of the social and physical family-environment of the child. In all countries, parental rules and home availability (of fruit, vegetables, soft drinks and availability of TV in the child's bedroom) were consistently different between the two socio-economic groups; although a common pattern for the determinants in all behaviours was not found. This indicates the importance of the family environment, related to socio-economic inequalities in childhood obesity. In addition, the differences in the determinants varied to a large extent across countries, illustrating country-specific inequalities. This heterogeneity in inequalities is confirmed in other studies as well (1, 2).

The baseline results of our study are compatible with other studies across European countries which also demonstrate that children from lower socio-economic status have unhealthier dietary habits (2-7) and increased sedentary behaviour (8, 9) compared to their high socio-economic status peers. Although various studies showed that family environmental determinants have been associated with dietary intake, consumption of sugary beverages and sedentary lifestyle, little is known about socio-economic disparities in these associations. Papoutsi et *al*, after reviewing multi-disciplinary literature to identify the determinants of childhood obesity, concluded, among others, that *the shared environment created by parents, affects children's choices and eventually their body weight outcomes* (10). Related evidence demonstrates that parental rules and/or accessibility at home are significantly associated with energy balance-related behaviours, such as screen time, intake of sugary drinks and fruit and vegetable consumption (5, 11, 12). The increased accessibility of fruits and vegetables-measured in terms of home availability, parental facilitation and allowance- have been shown to mediate adolescents' intake (13-15). On the other hand, the presence of screens in the child's bedroom has been associated with higher adiposity in preadolescents and lower sleep efficiency [16], while it contributes to the excess of the screen time (16, 17). Accordingly, we consider that parental rules and practices and home availability are crucial to be addressed in interventions aiming to decrease inequalities in childhood obesity. Therefore, each of the EPHE programmes was advised to focus their interventions-which lasted for 4-6 months-on improving family-environmental determinants related to inequalities identified in their communities.

4.2. After interventions

The measurements after the EPHE interventions showed that in some communities some of the unfavourable behaviours and determinants were improved in both low and high socio-economic groups. These positive changes contradict the commonly observed phenomenon that public health interventions may result to differential effects across population groups and thus they may increase inequalities, despite of being effective to the general population (18-23). This phenomenon is defined as the "intervention-generated inequality", meaning that the groups/populations mostly in need for health care are the least likely to benefit from it (18-21). Although in our intermediate measurements (exactly after the interventions) some new inequality gaps were identified (results not shown), these may be explained by the reduction of the samples due to lost to follow-up and thus could be inequalities that were not identified at baseline.

4.3. Evolution of inequalities in energy-balance related behaviour and family environmental determinants

Overall, the differences between low and high socio-economic groups in energy balance-related behaviours and family-related determinants were statistically significant but not large. Similarly, a few statistically significant and usually small changes were observed between baseline and after the interventions period within the low socio-economic groups and even less were sustained a year after. The duration of the intervention period was probably too short and consequently the intensity of the interventions low, due to the time constraints, to result in sustainable behaviour change. Acknowledging that behavioural change occurs after long-term sustainable interventions and endorsing evidence from recent systematic reviews, which shade light into effective strategies in reducing obesity-related inequalities, our results could be explained. In particular, the conclusions by Magneé et *al* and the recommendations of Hillier-Brown et *al* 2014b, suggest respectively that, long-term, multi-component and multi-level interventions, being embedded in onoing structures and involving different settings have the most potential to reduce inequalities in obesity-related outcomes (19, 23). Worth mentioning the Fleurbaix – Laventie Ville Sante´ study, based on the EPODE methodology, which showed a reduction in obesity prevalence in the intervention lower socio-economic group compared to the respective control group only after conducting 12 years of community-based interventions (24).

4.4. Strengths and Limitations

To our knowledge, this is the first evaluation study that provides data on socio-economic inequalities in family-environmental determinants associated with energy-balance related behaviours. The cross-cultural character of the sample enables the exploration of inequalities in factors that have been highly associated with childhood obesity, across different European countries. Hence the opportu-

nity to enhance insight of health inequalities is given, particularly in the European region where the socio-economic factors are changing rapidly over time. Also there is the prospect to sensitize communities with respect to socio-economic inequalities in childhood obesity and overweight. In addition, our results give new insight into energy-balance behaviours and their determinants, which should be the focus for the development of effective interventions aimed at reducing inequalities in childhood obesity. Another strength of this study is the high response rate achieved in almost all countries and successful commitment of the target groups.

For the purposes of the EPHE evaluation study, the participant programmes were selected on the basis of implementing the EPODE or EPODE-like methodology. At this point it should be clarified that the interventions implemented within the EPHE project were new and specifically focused at the selected behaviours and determinants to reduce health inequalities. Similar to the programme selection, it was a prerequisite for the participant city to be already engaged in an EPODE structure. The schools from which the samples were recruited were selected based on accessibility and convenience criteria. These schools were also chosen due to a limited time-frame. Hence, one limitation of this study is that sampling bias is likely present at many levels and our samples may not be representative of each country's population.

In addition the population of middle socio-economic status was divided among the population of high and low socio-economic status; thus the ability to detect big differences among the cohorts might be hindered. Another weakness of this study could be that we used the educational level of the mother as a proxy for socio-economic status, instead of using more indicators. Although, parental education level has been characterised as an adequate socio-economic indicator by relevant and more elaborative studies (1, 25, 26), this still reduces the strength of detecting absolute inequalities. It is important to mention that the power of the associations observed is decreased, due to loss-to follow-up.

Moreover, the data were self-reported and recall bias and/or socially desirable answers are possible. Furthermore, errors from the constructed items are possible, given that they were not validated. Considering that the family environmental correlates are assessed mostly by one item each, the reliability of the instrument may be violated (6). Finally, this is an effect evaluation and thus conclusions on the quality of the interventions that were carried out cannot be drawn.

5. Conclusions

Our study indicates socio-economic inequalities in factors strongly related to childhood obesity and overweight and provides evidence for those in seven European communities. These findings are indicative of socio-economic inequalities in our samples, but the variability across the countries was large. Inequalities in family environmental determinants, such as parental rules and availability of fruit, vegetables,

soft drinks, and screens in the personal space of the child should be studied in the country level, considering the importance of changing parental rules and practices. Finally, monitoring of interventions and process evaluation are crucial to understand the observed results.

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Conclusion and Perspectives

EPHE Operational Board

Position Paper

The **EPHE Operational Board** (EOB) included representatives from each of the 7 national coordination teams and, throughout the implementation of the project, was in charge of supervising, monitoring and offering the tools needed for effective development of the project in the field. The main objective of the EOB was to assist the programmes in the practical implementation of the EPHE project, while sharing experiences from each programme on the 4 different themes approached by EPHE.

EOB role was to:

- review the choice of the intervention communities and the evaluation framework established, in collaboration with the EPHE Scientific Advisory Board;
- design action sheets together with local stakeholders according to the recommendations from the EPHE Scientific Board and the EPHE Guidebook. These action sheets were tailored to reach the disadvantaged families;
- monitor on-going activities for the project evaluation and discuss how to overcome possible challenges;
- ensure the effective implementation and monitoring of actions.

The EPHE Operational Board was chaired by a coordinator, chosen from one of the participating national coordination teams, who contributed to all of the functions and operational aspects associated with the EPHE activities.

In order to ensure a good communication between members and have updates on the project's implementation, the EOB had regular meetings and briefings, online or during special events. The topic of each meeting was defined according to the stage of the project and the next steps to be implemented. During the 3-year project, the

EOB members met 6 times, participated in 2 webinars, and had regular communication sessions with the coordination team.

During the project, tools were put at the disposal of the national project management teams in order to help and guide the implementation process. The EPHE Guidebook (a practical guide describing the EPHE project elaborately), the framework for evaluation designed by the EPHE Scientific Board, together with a portfolio of activity sheets developed during the intervention period, communication and PR tools (press releases, video, newsletters), and the WHO Appraisal Tool (for the evaluation of the programmes) were accessible to the national coordinators and their teams.

The EOB worked closely with the EPHE Scientific Board in order to make sure that the evaluation of the project would be carried out accordingly, and the results then used to design interventions that would address the factors determined by the evaluation process.

The work of the EOB was concentrated in the first six months of the project on the selection of the towns for the implementation of EPHE, on determining best motivational tools to be used in the field, and on the preparation and implementation of the baseline evaluation. Partnerships were established in every country by each local organization in order to ensure the entire community's involvement in the EPHE project. Different stakeholders came together and collaborated throughout the implementation of the project in order to ensure the success of EPHE.

The bottom up approach used in establishing partnerships, doubled by the stakeholders' empowerment during implementation and their long term commitment to the project, stand as evidence of the EPHE project's success in the field.

When they chose the EPHE towns, the countries had to follow a standardized protocol defined by the EPHE Scientific Board, discussed and agreed with the members of the EOB. To ensure the comparability amongst the participant communities, the national coordination teams provided a description of the city they selected before the baseline measurements were conducted. The description included socio-economic information and health promotion programmes/campaigns conducted in the city, along with general information about the selected schools, including infrastructure. This information was gathered from all the EOB members using a template document and sent to the EPHE Scientific Board for analyse and review.

After the EPHE towns were selected and the target public identified, the members of the **EOB analysed the different approaches they could use to ensure a good participation rate for the baseline evaluation. Motivation tools were different in each country because of difference in contexts and habits.**

The countries were offered multiple options during one of the EOB meetings. The details about the motivational tools used by each country were also gathered by the EOB to ensure best reporting on the project.

The central coordination team further guided the national project managers into the preparation of the baseline evaluation's implementation: translating the questionnaires into the national language of the country, offering guidelines for the dissemination of the questionnaires, and processing the documents collected from the respondents.

The EOB and the Scientific Board closely collaborated to ensure that every step was being followed, that the national coordination teams had all the necessary information and that the first evaluation unrolled at best standards.

A first proof of the success of the joint work of the two EPHE boards and the national coordination teams was the *high response rate* registered during the baseline evaluation in most of the countries (over 85%). The high response rate was maintained over the next two evaluation periods, demonstrating the willingness to collaborate from the parents of the children involved in the project, as well as their interest for nutrition and health related issues.

Based on the results of the baseline measurements, the members of the EOB designed the local interventions which were implemented during the second year of the project and focused on the energy balance-related behaviours and their associated environmental determinants. **The specially tailored interventions were to be added to the programmes already established actions, and thus cover all the 4 themes addressed by EPHE. The community as a whole was targeted via the different activities, ensuring the non-stigmatization of the deprived population.**

Action plans were put in place by each country coordinator, member of the EOB, indicating the interventions to be implemented and their topic, target group to be reached, tools to be used. Descriptions were provided for all actions and the results were monitored to determine the impact of each intervention. The action plans were shared at the EOB level and with the EPHE Scientific Board. The interventions were different in each country, as the determinants of behaviours to be addressed varied, as shown in the results of the baseline evaluation. The actions were established through a participative process between local stakeholders. **This co-creation type of approach in designing the interventions ensured a good mobilization amongst stakeholders and offered a local ownership over the project's activities.**

To support the development of actions that would have a real impact in the community, activity sheets were developed by the members of the EOB during dedicated workshops on the project's themes, like sleep of physical activities. Programme coordinators shared their best practices from the field on the specific themes, inspiring the others on what tools they could use and adapt for their own communities.

The local and international communication on the projects' activities was also a good motivational factor. For example, the coordinated actions that were organized for the World Water Day in almost all of the EPHE communities and the communication campaign developed around the interventions ensured a good visibility of the project in the participating countries, leveraging the international aspect of the activity.

The results gathered for each intervention demonstrated the good level of involvement from the target public in each of the EPHE activities developed within the communities.

The last phase of the EPHE project was dedicated to implementing regular activities in the communities, and giving the possibility to organise a series of special events as part of the joint actions approach, in order to have coordinated interventions in all of the countries at a specific moment. Only a few programmes could develop joint actions, however, as most of them encountered barriers due to social or political context in their country, as well as budgetary constraints. In doing so, they kept empowering the local political leaders.

A last evaluation was organized at the end of the project to determine whether the gaps in health related issued between different socio-economical groups were reduced by the delivery of tailored interventions implemented throughout the three years of the project.

At the end of the implementation period, the final overview of the operational aspects of EPHE done by the members of the EOB determined that there is clear evidence of the success of the project.

The operational aspects of EPHE were well developed and implemented, thanks to the hard work and dedication of the national coordination teams, who succeeded in:

- **creating and developing long term, sustainable partnerships;**
- **empowering the communities and the local stakeholders;**
- **tailoring interventions based on local realities and the input received from the Scientific Board of the project;**
- **gathering communities around the health related themes and mobilizing the target public by its active and direct involvement in the project activities.**

The long term approach of EPHE offered continuity in the interventions and ensured brand recognition. The local programmes used the logos of their national campaigns in association with the EPHE logo in order to offer credibility and a good endorsement of the project. EPHE became a part of the community activities and a recognized source of information and actions on health related issues. The interventions developed throughout the project inspired the local stakeholders in taking the initiative and design other related actions which addressed the same issues as EPHE.

The practice in the field demonstrated that awareness-raising and motivation campaigns are essential for the success of community-based programmes on health related issues. They insure the involvement of the local stakeholders and encourage the participation of the targeted public in the project, including good results in the evaluation process.

When dealing with schools, as a main vehicle for disseminating the message and reaching the families, a good motivation campaign has a great importance for the

school staff (coordinators, teachers and educational assistants) as well as for the parents and the entire community. The involvement and motivation of teachers in the project is vital to the successful development of any intervention in this area, as they are the driving factor that can encourage the families and children's participation in the project.

For a successful implementation, the local operational team has to work closely with schools' staff and all the different stakeholders of the community, find out their motivation factors and activate those during the project. Every stakeholder in the community has a roll to play and can contribute to the project, as concluded by the members of the EOB. From the initial brainstorming and planning of an action in the field up to the day of the implementation, it is really important to include all key local actors in the process, according to their specialty and position. **This bottom-up – rather than top-down– approach has proven to be efficient when implementing health related programmes.** When talking about changing behaviours, all the key actors in a community have to be activated and take part in the campaign in order to have a real impact and reduce socio-economic inequalities in the families' health-related diet and physical activity-related behaviours.

As in any project, the EPHE national coordination teams had to deal with and overcome the barriers that arose during the implementation of the project. Challenges varied from **making sure that no stigmatisation was put on the deprived families to ensuring that the different tools and interventions were adapted to the local social context.** Also, the delay in funding and the lack of resources was an issue that the local programmes had to find solutions for in order to secure the continuity of the actions.

Another aspect that could be improved for future EPHE-like projects is a better coordination of the existing actions in the field and their benchmarking. This will determine the leverages for a successful implementation, and indicate any need to make improvements or adapt specific best practices to raise the impact and maximize the results.

For the further development of actions in the field, it is important to offer online access to already designed tools and best practices models identified within the EPHE project. Having at their disposals information about the actions and the tools to be used to tackle health inequalities, we can ensure the sustainability of the programmes.

When talking about the monitoring and evaluation of the community-based programmes, which is a vital phase in the project's development and sustainability, EPHE has demonstrated that it is important to establish good working processes with the partners involved in the project. Also, the centralization of all the interventions, and the constant review on the actions and the specific results registered can offer a good perspective on the success of the activities and their further development.

As mentioned before, the data collection process in the field must be supported by mobilization and motivation campaigns, which ensure a good involvement in the

programmes' activities and the evaluation process. Indicators like the number of the participants for each intervention, feedback received post event, the response rate for the evaluation stage, are all important aspects that need to be followed for a good overview of the project. Barriers can appear in collecting data when dealing with different socio-economical groups and designing tools that are generally valid. The EPHE questionnaire used in the evaluation process was a complex tool, covering different aspects of the energy balance-related behaviours and their associated environmental determinants. Its translation and wording had to be accessible to both low and high socio-economical groups, so that the former group wouldn't have difficulties in understanding the message. **Finding the perfect wording in its own language was a challenge that each country had to overcome.**

Also, when participating to such a study, the participants want to have access to the results and a delay in the delivery of the information may influence the rate of response for the next evaluation phase of the project. All these aspects have to be dealt with and managed in a proactive manner to ensure the success of the project.

EPHE, with its operational approach and mix of tools and expertise, has offered a perfect example of how the Community-based Programmes promoting health are a solution when tackling health inequities. The effectiveness of a programme at local level requires a participatory decision-making process, involving all key stakeholders in a community. Only by including everyone in the local area of the project –private and public partners– can we expect to impact and create change, thus influencing the behaviours and habits of families, independent of their socio-economic status.

The findings of EPHE presented in this book encourage a further exploration of how the community-based interventions can be used in understanding the dynamics of a community when trying to influence and change the behaviours that determine health inequalities.

EPODE methodology to reduce health inequalities related to diet and physical activity: A personal perspective

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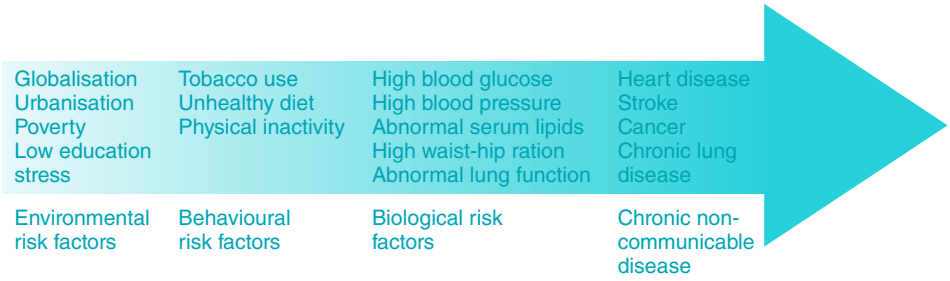
Since the 19th century, inequalities in health have been of a major concern to public health professionals. A milestone is the publication *The Sanitary Conditions of the Labouring Population* (1842) of Edwin Chadwick, a British public health reformer (1). Health inequalities presented themselves by high mortality in deprived populations primarily caused by infectious diseases and malnutrition. These in turn were caused by poor sanitary conditions, unhealthy environments at the workplace and in housing, and poverty.

After the Second World War, most of these conditions rapidly improve in most European countries and cities. Yet, inequalities persist, as described by Jerry Morris in 1979 (2). Outright poverty is much less present. Morris however points out two major issues: poverty and inequality. These overlap but are by no means the same.

Also, in the second half of the 20th century, wealth and income, housing and environment, education and social skills, status and esteem, those major resources and conditions of health, are unequally divided in our society, leading to large social inequalities in health.

In the 20th century, the most important cause of social inequalities in health amongst affluent communities, such as most European countries, is the incidence of chronic non-communicable diseases (see figure below). These in turn are caused by inequalities in biological risk factors. Most of these risk factors are strongly related to behavioural risk factors. Further upstream can be attributed to environmental factors (physical, socio-cultural, economic and political environments).



In his paper, Jerry Morris already points out to these social environmental factors (2). Toba Bryant and others have since proposed a commonly accepted and extensive list of social factors that are currently contributing to health inequalities:

– Income and Income distribution;
– Education;
– Employment and Working conditions;
– Early childhood development;
– Food insecurity;
– Housing;
– Social exclusion;
– Social safety network;
– Health services;
– Aboriginal status;
– Gender;
– Race;
– Disability.

Morris also points out that, in order to diminish these inequalities, a life course approach is needed with great emphasis on early childhood: "creating more equal opportunities for the under-fives through education and day care, expanding child benefit and family endowment, concentrating health services on the socially disadvantaged, and setting an upgraded 'health education' to the task with mothers and children and the whole population" (2).

In the context of the EPHE programme, it was of course not possible to address changes in policy that would lead to the changes in the upstream social factors mentioned above. These policies need to be developed and, at the same time, community-based interventions need to be developed. But the EPODE framework does address upstream factors proximal to inequalities in health-related behaviours in the community (4). In the short time span and with the limited resources granted to EPHE, attention was focused on behavioural determinants in the households of children. These pointed towards shared factors related to parenting, economic factors and the physical environment of the households in various countries. The determination of social determinants of behaviour that posed barriers to healthy choices, particularly in the groups with lower socio-economic position, were instrumental in locally tailored interventions. Based upon this knowledge, the operational board was able to design

interventions within the EPODE framework that theoretically would reduce inequalities in these health-related behaviours. Those, on the short-term, appeared to be beneficial for several behavioural factors but, now, sustainable actions are needed.

A long-term approach towards reducing health inequalities ideally combines structural national and local policies on upstream social factors as well as locally tailored interventions aimed at health promotion targeting the barriers experienced by groups with relatively low social economic positions.

The EPODE methodology, combining political commitment, social marketing, public-private partnerships and evaluation (5), seems to be a valuable element in the strategy to diminish social inequalities in health in children.

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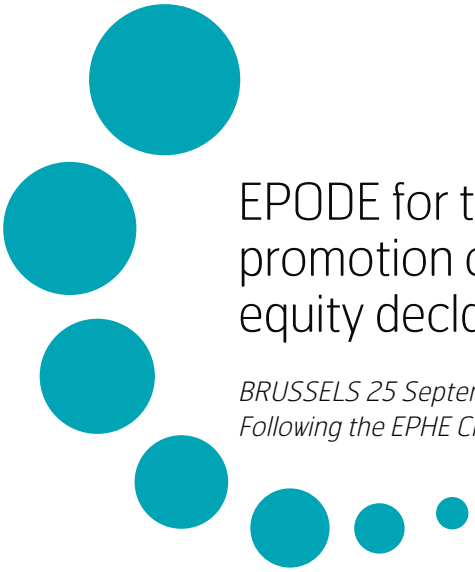

EPODE for the promotion of health equity declaration

BRUSSELS 25 September 2015
Following the EPHE Closing Event

Health equity is the absence of systematic differences in health and its determinants between groups of people at different levels of social advantage.

WE, involved in childhood obesity prevention in 20 European countries: politicians, community-based programme coordinators, leading experts, representatives from public health institutions, civil society, corporate sectors, local associations and NGOs:

Declare that community-based programmes (CBPs) are an essential part of a long-term sustainable solution to prevent obesity and to promote healthy active lifestyles. They also have positive effects on environment, economics and enhance social cohesion;

Declare that the community-based approach is able to increase health equity at the local level and has a positive impact on the population health especially for low socio-economic groups;

Declare that we need successful initiatives to be integrated by the communities at the local, regional and national levels.

We act to encourage communities to integrate a multi-stakeholder approach in their local health politics and appoint in every city a local project manager to coordinate this community-based approach.

WE act to integrate health equity in all policies especially at local level.

WE agree that no single intervention creates significant impact to increase health equity; only a comprehensive systemic programme of multiple interventions is likely to be effective.

WE call on representatives from all sectors to become involved, to achieve a sustainable, effective and equitable obesity prevention, to support CBPs and to join the global obesity prevention movement that is beginning here and now.

WE CAN reduce children obesity prevalence and health inequities.

Private Partners Statements

Ferrero's Statement

Ferrero has always encouraged a healthy lifestyle, especially for young people, based on physical activity and a responsible consumption of its products.

This commitment is, inter alia, demonstrated by:

- mainly targeting our commercial communications to parents, in order to support their crucial role in educating their children to a balanced diet and a healthy lifestyle;
- providing parents with products whose portion sizes allow them to ensure a balanced consumption by their children.

Obesity is a complex and multi-factorial issue, resulting from a combination of different causes, such as genetic predisposition, unbalanced diet, socio-economic factors and, most of all, sedentary lifestyle. In the context of the current obesity debate, adequate attention should be drawn to the equation energy-in energy-out. Industry has acknowledged the relevance of this factor and undertaken a series of actions, including programmes aimed at promoting physical activity and a healthy active lifestyle, especially amongst children.

The food industry has a role to play, namely by supporting public education programmes endorsed by relevant institutions and governments. EPODE ("*Ensemble, prévenons l'obésité des enfants*"), initially launched in some selected French villages, provides precisely this kind of opportunity, as it is supported by both public and private entities, with different fields of action. The programme itself is run by public authorities, while private partners do not interfere with the planning and execution. For the above reasons, in the framework of the European platform on "Diet, Physical activity and Health", Ferrero committed to supporting the EPODE Programme as well as the European Epode Network (EEN), launched with the support of DG Health and Food Safety of the European Commission in order to strengthen the public-private

partnership with social value and provide a more formal structure for sharing best practices, so as to allow for a wider application of the EPODE Programme.

FERRERO's commitment to support EPODE includes the following:

- contributing to the funding of the activities of EPODE in France (since 2006), as well as the implementation of community-based interventions in the additional countries where the Programme was subsequently launched: Belgium (VIASANO) since 2007, Spain (THAO) since 2008, The Netherlands (JOGG – Breda) since 2012;
- since 2012, contributing to the funding of the major project of EEN platform, called "EPHE - EPODE for the Promotion of Health Equity". This three-year project focuses in particular on socio-economic inequalities, with the objective of decreasing the risk of conditions related to poor diets and sedentary lifestyles in families in 7 European countries. In 2014, Ferrero's contribution to EPHE helped to cover activities such as: the coordination of the project, including an overall strategic, technical and administrative management, support research activities of the university teams involved in the project, organisation of committee meetings and workshops, administration of the website, dissemination of newsletters and communication materials, interventions in congresses and conferences.

Mars' Statement

Why is Mars interested in the EPODE approach?

At Mars, one of the world's largest food companies, we make great-tasting products that people feel confident about eating and feeding to their families and family pets. By delivering brands that consumers and even pet owners love, we have continuous opportunities to learn and to grow based on our consumers' feedback. Success for Mars, Inc. is to create mutual benefits for others —our associates, suppliers, partners and the communities where we operate. We embrace our responsibility to continually improve our great-tasting products and deliver more healthy food, advance nutritional research, promote oral health, and support programmes that encourage active lifestyles and healthy balanced diets.

In this context, Mars is fully supportive of the EPODE approach to tackle childhood obesity because of its focus on communities and its being inclusive, holistic and impactful.

Inclusive: because it involves all key local community players (e.g. —schools, families, public authorities, local medical professionals, etc.).

Holistic: because it seeks to influence positive behavioral change through a global community approach including education enshrined in real life situations.

Impactful: because the proven success of the initial 1992 programme in 2 small villages (Fleurbaix and Laventie) in the North of France is delivering a significant decrease in obesity and overweight levels and has been replicated in more than 220 towns across Europe.

Why is Mars supporting the EPODE European Network (EEN) and Epode for the Promotion of Health Equity?

Consumers are able to enjoy Mars brands in every European country. Our ambition is to play our part in addressing one of society's current challenges: reducing obesity. To this end, we have been continuously improving our products and offering healthier options, engaging in responsible approaches to marketing and labelling, promoting the oral health benefits of sugar-free gum, advancing nutritional research, and supporting programmes that encourage active lifestyles and healthy diets. This multi-faceted approach by its very nature is pan-European.

Supporting an effective and proven impactful community-based programme such as EPODE across Europe is a natural application of our efforts to drive positive changes in the lives of our consumers.

EPODE is an important programme for Mars to support. It has demonstrated success, and it leverages a framework that is built on tackling obesity through a holistic approach that combines individuals and communities. Furthermore, the EPODE model is being extended outside of Europe so its key lessons can be applied globally, making EPODE not only a programme of European relevance but also of international significance.

This support is in line with Mars activities to promote health and well-being.

Mars activities and dedication are illustrated by commitments in the Consumer Goods Forum (CGF), the International Food and Beverage Alliance (IFBA) or actions through FoodDrinkEurope. Similarly Mars is contributing to the success of the EU platform on "Diet, Physical Activity and Health". This platform has also highlighted the need for public and private sector to work in partnership. EPODE for the Promotion of Health Equity project is focusing its scope with clear intentions and we are confident that it will be as successful as it already is.

You can find more information about Mars activities on our website: http://www.mars.com/global/about-mars/principles-in-action.aspx

Danone's Statement

Underpinning Danone's mission "to bring health through food to as many people as possible" is our belief that good health is everything to all of us and that food is health's most significant partner: healthy dietary habits are an essential part of life to build and maintain our well-being.

At Danone, we stand next to our employees and our consumers in their quest for good health, by encouraging diets and lifestyles that will benefit people most. We will stand for the widest range of products and services to feed the needs and wishes of every person at every key stage of life, encouraging balanced nutritional habits or delivering specific health benefits.

Danone's five fundamental commitments related to health and nutrition are:

1. to offer products tailored to nutritional needs and recommendations, tastes and incomes;
2. to develop products with relevant, scientifically proven health benefits that meet real nutritional needs;
3. to provide consumers clear information, and advertise responsibly;
4. to promote healthy diets and lifestyles;
5. to address and help resolve major societal challenges on health and nutrition.

Danone has developed its own educational programmes in collaboration with academic and/or governmental partners (like "Mum, Dad, I prefer water" and "Eat like a champ"), and also supports projects like for example the EPODE for the Promotion of Health Equity (EPHE).

Furthermore Danone continues to invest in research to understand eating practices and the necessary dynamics to promote healthy diets and healthier eating behaviors.

We believe that an in-depth understanding of people's dietary habits and the proven benefits of healthier diets is a prerequisite when promoting them.

In this context Danone established (2009) the Hydration for Health Initiative (www.h4hinitiative.com) to help advance science and education and to raise public awareness on the correlation between good hydration and good health. As science progresses, good hydration –drinking water in particular– proves to be an important (but often forgotten!) factor in the prevention of certain important diseases like chronic and acute kidney disease and obesity.

Why Danone decided to support the EPHE project

Overweight and obesity as well as global health issues are increasingly growing. They have multifactorial and interconnected origins but an unhealthy lifestyle and unbalanced diet can have a direct impact on the increase of these non-communicable diseases.

While both science and public debates on the causes and possible solutions of obesity and overweight progress, Danone believes the issue requires urgent multi-stakeholder action: reversing the obesity epidemic will only be achieved if academics, NGOs, policy makers, local communities and private partners like Danone work together.

EPODE for the Promotion of Health Equity (EPHE) is currently the most significant public-private partnership in Europe to help tackling the rising levels of overweight and obesity. Key success factors of the EPHE project are its pragmatic (replicable) approach, its proximity to local communities and the passion and dedication of its local "ambassadors".

Our shared health conviction, our many shared values and the belief that we could add genuine value to the project through our specific knowledge and expertise convinced Danone to join the EPHE initiative when it was launched in 2013.