Title: Characterising the EPODE logic model: Unravelling the past and informing the future

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ABSTRACT

EPODE ('Ensemble Prévenons l'Obésité De Enfants' or 'Together let's Prevent Childhood Obesity') is a large-scale, centrally coordinated, capacity building approach for communities to implement effective and sustainable strategies to prevent childhood obesity. Since 2004, EPODE has been implemented in over 500 communities in six countries. Although based on emergent practice and scientific knowledge EPODE, as many community programmes, lacks a logic model depicting key-elements of the approach. The objective of this study is to gain insight in the dynamics and key-elements of EPODE and to represent these in a schematic logic model. EPODE process manuals and documents were collected and interviews were held with professionals involved in the planning and delivery of EPODE. Retrieved data was coded, themed and placed in a four level logic model. With input from international experts, this model was scaled down to a concise logic model covering four critical components: political commitment, public and private partnerships, social marketing and evaluation. The here presented EPODE logic model can be used as a reference for future and follow-up research; to support future implementation of EPODE in communities; as a tool in the engagement of stakeholders; and to guide the construction of a locally tailored evaluation plan.

INTRODUCTION

Obesity prevention is an international public health priority and there is growing evidence of the impact of overweight and obesity on short and long-term functioning, health and wellbeing. Internationally, childhood obesity rates continue to rise in some countries (e.g. Mexico, India, China, Canada), although there is emerging evidence of a slowing of this increase or a plateauing in some age groups and in most European countries, the US and Australia [1, 2]. The evidence is strong that once obesity is established, it is difficult to reverse through interventions [3] and tracks through to adulthood [4] strengthening the case for primary prevention in children.

Although a number of governments are acting to implement strategies for obesity prevention, the available knowledge base on which to develop a platform of obesity prevention actions and base decisions about public health and other interventions to reduce the risk of obesity has, to date, remained unclear. An important reason is the multitude of factors influencing the development of overweight and obesity. There is not one universal causing factor in the development of overweight and obesity. And although (mostly experimental) research provides insight to causal factors driving overweight and obesity, the strongest evidence derives from the biological and behavioural research area. However, determinants of overweight and obesity lie not only within biological elements of the individual and its behaviour, but also in the environment [5, 6]. These upstream environmental factors of obesity and overweight have been described in the International Obesity Task Force causal web [7] and more comprehensively in the UK Government's Foresight Programme [8]. It is therefore remarkable that most interventions to prevent overweight and obesity are focused on single variables or within a single setting and rarely take a multi-level or 'system-based' approach.

To address and study the complex web of individual and environmental determinants of overweight and obesity in children a community wide strategy is necessary. Some lessons can be drawn from large community wide programs to reduce Cardio Vascular Disease risk, such as the Stanford Five-City project [9], the Pawtucket Heart Health program [10] and the Dutch Hartslag Limburg program [11]. In the context of obesity prevention, some school based prevention programs have been successful [12-16] and data is beginning to emerge from a small number of comprehensive community wide intervention approaches targeting obesity in children [17-20]. A community wide strategy should target change in the

child's behaviour (related to energy intake and expenditure) through changes in its physical, socio-cultural, economic and political environment [5, 21-23]. Moreover, this multi-faceted strategy should be long-term to evaluate and monitor changes in knowledge, attitudes, behaviours as well as adiposity outcomes [5, 24].

The French EPODE program is a community wide program that aims to prevent overweight and obesity in children through a multi-activity, multi-setting and multi-stakeholder approach [25]. Although based on experiences of a school-based nutrition program [26], EPODE was originally developed and implemented 'outside' of an academic context by program managers and marketing professionals with a strategic emphasis on social marketing techniques and broaden stakeholder engagement (public and private) at national and local level[25]. As many other community wide programs it lacked a well conceptualized program theory or logic model [27, 28].

From the initial group of 10 EPODE communities, the program has grown and EPODE has now been implemented in more than 300 communities in France, Spain and Belgium, and more recently also in Greece, Australia, Mexico and in The Netherlands. This widespread implementation not only illustrates the popularity of the program with politicians and policymakers, but also attracts significant interest from the academic community. Although this does not necessarily mean that the program is effective and successful.

This paper aims to learn more on the dynamics and key-elements of the EPODE program tackling childhood overweight and obesity to support future research and evaluation. To clarify process elements of the EPODE program a logic model approach is used [29]. A logic model is a graphic representation of the program and the outcomes to be achieved and helps to identify key elements of the program. Although logic models can take many forms the basic features are input or resources, activities, outputs, short-, intermediate- and long term outcomes [29]. With help from EPODE stakeholders, documents, existing Health Promotion models and socio-ecological models the overarching EPODE logic model will be shaped. This report describes the process used to clarify the overarching EPODE logic model.

METHODOLOGY

Data Collection

In order to develop the EPODE logic model we searched for logic models representing a health promotion community program for the prevention of obesity and overweight in children similar to EPODE. It was decided to use a comprehensive logic model for health promotion as a general conceptual basis or reference model which could be used for the retrospective modelling of the EPODE program theory. The model by Saan and De Haes [30] is a comprehensive theoretical basis that follows the basic structure of a logic model and connects the different aspects of health promotion from organisation and interventions through intervention results and determinants resulting in quality of life [30]. This model is based on the work of Green en Kreuter [31], Nutbeam [32] and the Ottawa Charter [33]. The model is widely known and used in The Netherlands to plan and structure implementation and evaluation of health promotion programs. To gain insight into the EPODE program information was collected from documents and experiences, organisation and implementation descriptions of the program in EPODE communities and mapped to this framework.

First, documents (in English and Dutch) were collected through the EPODE program managers and the Central Coordination Teams from France (EPODE) and its affiliates in Belgium (VIASANO) and Spain (THAO). The researcher asked the national program coordinators for documents describing the EPODE methodology. French documents were asked to be translated in English. The documents consisted of 2 local program plans, approximately 50 local press releases, some program descriptions and prints from different websites, a grant application, one scientific article, one DVD visualizing local activities, several PowerPoint presentations by the National Coordination Teams on different occasions, evaluation data collection lists, a dozen leaflets and posters specified for target groups, a program roadmap and a toolkit for local use. A full report of used documents is available upon request by the corresponding author. These documents were examined, coded and information was tagged as input, activities, outputs and outcomes. It became apparent that activities were performed and outcomes reached on four successive levels of the program, namely: Central Organisation, Local Organisation, Community and The Child.

Second, information on EPODE was retrieved through conducting semi-structured interviews from February until May 2009 with stakeholders involved in the EPODE program on both local and central level. At central level, three interviews were held with the national program coordinators from EPODE and its affiliates in Belgium (VIASANO) and Spain (THAO). At local level, interviews were held with local program managers of four EPODE cities in France and with one area program manager, responsible for the implementation of the EPODE methodology in multiple communities. In two of those interviews the health representative was present and participated in the interview. Selection criteria for the cities were 1) to be working with the EPODE methodology for at least four years, 2) to differ in the number of inhabitants and 3) to differ in geographical area in France. The model by Saan and De Haes [30] guided the construction of the interview guide. Information was collected on the organisation, implementation (o.a. activities, collaborations, communication and program satisfaction) and evaluation of the program at both local and national level, and on program goals and objectives. The interviewer spoke English as did all of the national level interviewees. All local level interviewees spoke French; a translator was present during the interviews. All interviews were minuted, recorded and transcribed. The interviews were then coded through the method of open coding followed by themed coding or axial coding. The themes were in line with the elements of the reference framework of Saan & De Haes [30].

Data Analysis

Coding the information retrieved from the documents and the interviews was performed in the context of the model by Saan and De Haes [30]. After coding, the elements were tagged as input, activities, outputs or outcomes on the four successive levels of the program. The data showed EPODE to be a multi-level strategy; different strategies were implemented at central level, local level, in multiple settings in the designated community and directed at the child and its family. Identified elements were placed within each level and organised by the researcher in input, activities and output using the process of forward and backward mapping [29] This resulted in a four-level logic model comprising 79 variables (see Supplement 1 Web annex).

However, this comprehensive logical model includes elements not present, and maybe not even desirable, in every EPODE community. Moreover, it was not easy to comprehend and did not leave room for tailoring to the local circumstances. Therefore experts and members of EPODE national program coordination teams were asked to review and refine the 79 variables logic model. These experts were: members of the Scientific Workgroup of the European EPODE Network, members of the Board of the European EPODE Network and eight selected experts from the research advisory committee. The eight experts were familiar with the EPODE approach, had expertise in the implementation and/or evaluation of community based interventions and obesity and overweight prevention strategies. In the expert meetings the logic model was discussed and elements were considered and subsequent iterations were further reviewed by the experts. This process finally led to consensus on 13 key-elements placed in a linear logic model and accepted by all as the overarching EPODE logic model.

RESULTS

Retrieved data presented EPODE as centrally coordinated and locally implemented comprehensive multifaceted and multi-level community based intervention program directed to prevent obesity and overweight in children. The main input and activities reported by interviewees and presented in the documents could be labelled as: generating political commitment; establishing public and private partnerships; the use of social marketing strategies and monitoring and evaluation. The ultimate goal of the EPODE approach, as stated by the interviewees and presented in the documents, is to enable community stakeholders to implement effective and sustainable strategies to promote healthier lifestyles and prevent childhood obesity. The central coordination team offers communities a complete program to be implemented at local level, with clear guidelines, support, training, materials and coordination from central level.

The overarching EPODE logic model, back drafted from existing and ongoing EPODE programs, clarified with help from local and central professionals and experts is presented in figure 1 with the long term goal: to reduce the percentage of children with overweight as much as possible. In this logic model the following elements can be identified: key-elements in planning, organisation and implementation; four

integrated organisational and delivery levels and the four critical components (also referred to as 'the EPODE pillars') of the EPODE program.

In the EPODE approach central coordination emphasises 'the EPODE pillars' to enhance program sustainability and community involvement. These pillars are:

- Political Commitment – It is hypothesized that before a program starts in the designated area formal political commitment from leaders of key organisations which influence national/federal/state and local policies, environments and childhood settings is to be essential in program funding, sustainability and networking. All interviewed program managers report the presence of a local enthusiastic actor or ambassador engaged with and moved by the health problem at hand. This ambassador contacted the EPODE central coordination team for guidelines and support to implement the program at a local level. In some cases this was the representative or the mayor, if not, the central coordination provided materials to this ambassador to support advocacy activities to gain local political support. According to the interviewed program managers and the representatives political involvement is important for agenda setting at both strategical and tactical level within local government, and the pursuit of partnerships with local organisations, both public and private. Local political involvement is confirmed by the signing of a charter with the central organisation, promising financial, managerial and organisational support. When the representative is part of the local team decisions can be taken quickly due to short lines with the town council. However, the representative is not always part of the local team.
- Public-private partnerships - Public-private partnerships are encouraged to participate in the program with monetary and non-monetary resources such as knowledge or products. Commitment of private partners is formalised with a signed charter. Participation takes place at central and at local level. The local program manager is in all cases public funded. Pursuing involvement of private partners at local level seems to depend on the attitude of the central coordination scheme, awareness of the program manager of the potential value of public-private partnerships for the implementation of EPODE or the pursuit of program goals. The interviewed local program managers and representatives give different reasons for the involvement of private partners in the program. Reasons mentioned were: monetary

funding, a location to display healthy messages, being part of the community, awareness raising of the EPODE program, to assist in tailoring activities. One program manager reported a lack of success into entering partnerships with private parties due to lack of time and expertise. The program managers also indicate of the value of collaboration with public partners as resources of knowledge and expertise. For instance the involvement of community welfare organisations experienced in working with children and adolescents of low socioeconomic status; students assisting in data collection; parent associations organizing activities; dieticians and general practitioners involved in collection of weight management data and local awareness raising; and policy makers from sectors other than health as members of the steering committee.

- Monitoring and Evaluation – The central coordination team provides guidelines and measurement tools to collect data for the process and impact evaluation. Data on process (of implemented activities, program manager satisfaction), output (number of participants, activities, meetings, time spent on program) and outcome (BMI) of the community program is collected by the local organisation and sent to the central coordination team. The central coordination team analyse the local data and disseminate the data to each community and to local and national partners. All project leaders indicate that the central coordination team specifies in the guidelines what data to collect and how this should be done. However, not all data is being collected accordingly. Barriers include lack of time, personnel, expertise and knowledge; a disappointing return of questionnaires; program managers were neglected admission to schools to measure children; and fear of 'disappointing' results. All interviewed program managers do say that collection of height and weight measurements receives their primary attention in data collection. Program goals and objectives are included in the national guidelines and only one local program manager (with a background in evaluation and epidemiology) reported determining their own program goals and objectives and had a written a project plan tailored to the local situation. Other program managers followed the guidelines from the central coordination team.
- Social marketing - The last critical factor is the use of social marketing techniques to develop and disseminate healthy messages for different target groups. These messages are developed by central

coordination with use of experts, literature and field experience. The messages relate to a specific health behaviour or determinant(s) of health behaviour and are directed at specified (segmented for age and social economic status) groups within the community. For more information on the creation of EPODE marketing materials see Henley and Raffin [34] and the article of Borys et al.[25] Objectives of the messages are to empower, mobilize, raise awareness or to inform the segmented target population. Examples of the segmented target groups are: schoolchildren (different age groups), parents, teachers, pre-school professionals, general practitioners. The EPODE messages are simple, concentrate on one target behaviour at the time and reinforce with practical activities and resources. Local program managers receive soft-copies of the messages and tailor them with local information before printing. All program managers use the EPODE tools developed at central level.

The interviews and documents showed EPODE to work on four integrated levels, namely: the level of the central organisation, the level of local organisation, the community level and the child level (see figure 2). Each level provides input for the next level. Output or outcomes on each level should reflect and provide feedback to the performance of the implementation (activities and input) of that level or of preceding levels.

Interviews with national coordinators and documents show a central organisation comprised of a central coordination team supported by a scientific committee. The central coordination team is responsible for coordinating and implementing the connection between the four pillars. Activities comprise national coordination and dissemination of the program, national societal and political agenda setting, public and private funding of the program implementation and coordination, creation of communication materials, data collection, analyses and evaluation of the local program, training of local program managers, the scientific substantiation and recruitment of new cities. The central coordination team is based within a social marketing agency; employees are professionals experienced in nutrition, health education, social marketing, press relations, monitoring and evaluation, communication, physical activity and text writing. The scientific committee assembles professionals and scientists in the field of nutrition,

physical exercise, behavioural science and paediatrics. This scientific committee is consulted in the content of training and the development of social marketing materials.

In all documented EPODE communities the local organizational level is coordinated by the local program manager appointed by the mayor and funded by local government. He or she assembles and steers a local organisation team and is responsible for the advocacy of the program. In both tasks he or she is supported by the health representative or the mayor. The central coordination team provides local program managers with guidelines for the local organisation. The local program managers all indicate that they follow the guidelines the central coordination team provided them. On some occasions they have to improvise to adapt to changing local circumstances. Local supportive professionals (known as stakeholders) are members of the local organisation. Although members differ between the communities the following groups are represented in the local organisation: health professionals (e.g. general practitioner, dietician, school doctor and school nurse), community key figures, parental associations and interested professionals from local public and private organizations. The organisational outline varies depending available resources in the local community (time, knowledge, expertise and personnel), existing networks and stakeholders' needs. The local organisation varies from a local team combined with a steering committee or only a steering committee supported by working groups. In each community the local organisation is responsible for advocacy, community capacity building and activities stimulating healthy nutrition and physical activity and the linkage between the four EPODE pillars.

Activities associated with advocacy are aimed at obtaining a broad political commitment to the program and of the urgency of overweight and obesity prevention in children; at gaining policy support from departments outside the health sector to the program and program aims, and social acceptance of the program and of the program aims. This is believed to be necessary to create sustainable healthy living conditions for children that encourage exercise and healthy nutrition. This includes the direct physical and socio-cultural environment of the child in their neighbourhood, at school and at home. The communities are not all equally active in advocacy to achieve environmental change. One program manager indicated that stimulating participation of public organizations, associations and professionals, and collaboration between them was their primary concern instead of stimulating involvement of

politicians and policy makers from other governmental sectors. Another community found collaboration with a non-health department difficult and time-consuming due to differences in language and goals.

The EPODE program stimulates participation and active involvement of all community members (i.e. teachers, school board, local industries, small and medium enterprises, general practitioners, nurseries, pharmacies, sport clubs, welfare and parental associations). The EPODE guidelines provide examples of invitational letters and informative meetings. Other activities associated with community capacity building are: the spread of communication materials in the community for change in cognition and attitude of the target group and their social system towards healthy nutrition and physical activity in everyday life; regular training sessions provided by the central coordination team for the local program manager; roadmaps and toolkits developed by the central coordination team delivered at local level to support social networks and the local organization; the initiation of activities by the community and of securing sustainable resources (means and people).

Nutritional and physical activities (e.g. sporting events at school or in the neighbourhood, nutrition classroom courses and communication tools) are primarily directed at the children with suspected spill-over effects to parents. All activities are approved by the central coordination team and reviewed by the central scientific committee. The activities are intended to create a positive change in attitude and increases knowledge on what is a healthy diet and the daily amount of physical activity for good health and increase skills to eat healthily and be physically active. The implementation of the activities directed at children and their parents (social environment) takes place at several settings namely neighbourhoods, schools and at home. Two of the interviewed program managers have made alterations to the proposed activities in consultation with community welfare organisations to fit to the needs, assets and capability of people from a low social economic status while another program manager confirmed that while she had not made changes she was not bound to use the activities proposed by the central team.

The combination of advocacy, community capacity building and activities to promote healthy nutrition and physical activity are hypothesized to stimulate a sustainable change in the social and physical environment of the child. This change combined with a positive change in the psychosocial and cognitive determinants of risk factors as knowledge, skills and attitudes is believed to stimulate the child's

healthy behaviour and reach the final outcome of program: to reduce the percentage of children with overweight in the community as much as possible.

CONCLUSIONS

The aim of this research is to learn more on the dynamics and key-elements of the EPODE program tackling childhood overweight and obesity. The retrospective construction of the EPODE program with input from local and national coordinators, document analyses and expert opinion gave a clear but robust overview of the way the program intents to work. Although it would be preferred to develop a program based on a theoretical model, this is a pragmatic approach for making it possible to support future refinement of a complex multi-component health promotion approach developed within a community using expertise and enthusiasm of community members. Moreover this model can be used to support future research and the development of an evaluation framework of similar programmes worldwide.

Retrospective logic model design through document analysis and interviews has been used before. A study that tried to compare program theories used to develop multi-component community approaches concluded that program theories are not explicated in program plans for community based approaches (Harting & Van Assema, 2011). Therefore these were constructed retrospectively in the same way as in underlying study. An important condition to make retrospective construction possible is the availability of thorough programme documentation and supplemented with stakeholder information. Within EPODE this information was available. Moreover it is inherent to a community wide multi-component approach, as EPODE, that it is continuously developing and changing. Even when a logic model has been created at the start of the program, it is subject to change during program evolution. Therefore one of the conditions for a logic model of a comprehensive community wide health promotion program is that it is flexible enough to make alterations possible during program implementation.

The construction of a logic model is an important element in the implementation and evaluation of comprehensive community wide health promotion programs. However, a fundamental characteristic of such a program is that it is developed in accordance with community members following their needs and

available resources. And although the EPODE guidelines provide program managers and communities with information on implementation and evaluation the programs differ per community. This is caused by variation in available resources such as time, knowledge, expertise, existing collaborations; organisational structure, actors and used activities. For this reason it is not possible to construct *one* logic model that is an exact fit to all EPODE communities. The logic model presented here therefore describes the conceptual foundations of the program but leaves the methods, intervention choice and the explication and quantification of desired short term, medium term and long term outcomes to the communities. In doing so it provides the outline of the activities to be undertaken and can be extended following desired program objectives of the community, the needs of stakeholders and program planners, program budget and the context of the program.

The here presented EPODE logic model follows the outline of a basic logic model. It is a linear model. However a community wide approach is not a linear approach; many linkages, interactions and reciprocal consultations exist between the key-elements. The EPODE logic model focuses on the principal linkages and as such it can be considered an overarching or umbrella model for this community wide approach to the prevention of excess weight in children. As such it can be used by current and future EPODE central coordination teams and by local program managers in other countries and communities to support the implementation of the methodology, to explain the program logic to newcomers and outsiders and to stimulate stakeholder engagement while leaving room for local fine-tuning and interpretation. Additionally, the model will be supportive to the evaluation (planning) of current and future EPODE programs. A logic model is not only a necessary pre-requisite to a full process evaluation but it can be a supportive tool for evaluation planning, to set program goals and objectives, define evaluation questions and choose the necessary measurements to answer these evaluation questions. In a broader context the EPODE model will help to scale up the EPODE methodology across multiple communities across the world in a coordinated manner.

Although based on existing theoretical models it is not clear if the EPODE logic model has any relationship with program success yet. This will be evaluated in the next few years. Follow-up research will concentrate on continuous evidence based improvement of local logic models and the construction of

an evaluation framework for EPODE and the alike based upon the here presented logic model, existing evaluation frameworks, expert views and implementation experiences. In doing so the logic model will be extended and fine-tuned and might become more of a program theory. This overarching model can be a first step to learn more on the dynamics, causalities and key-elements of a community wide program directed to prevent overweight and obesity in children and as such add to a knowledge base on community wide overweight prevention to be used in future research.

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