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# Developing the IDEFICS community-based intervention program to enhance eating behaviors in 2- to 8-year-old children: findings from focus groups with children and parents

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## Abstract

One purpose of ‘identification and prevention of dietary- and lifestyle-induced health effects in children and infants’ (IDEFICS) is to implement a standardized community-based multi-component healthy eating intervention for younger children in eight different countries. The present study describes important influenc-

ing factors for dietary behaviors among children aged 2–8 years old in order to determine the best approaches for developing the dietary components of the standardized intervention. Twenty focus groups with children (74 boys, 81 girls) and 36 focus groups with 189 parents (28 men, 161 women) were conducted. Only in two countries, children mentioned receiving nutrition education at school. Rules at home and at school ranged from not allowing the consumption of unhealthy products to allowing everything. The same diversity was found for availability of (un)healthy products at home and school. Parents mentioned personal (lack of time, financial constraints, preferences), socio-environmental (family, peer influences), institutional (school policies) and physical–environmental (availability of unhealthy products, price, season) barriers for healthy eating. This focus group research provided valuable information to guide the first phase in the IDEFICS intervention development. There was a large variability in findings within countries. Interventions should be tailored at the personal and environmental level to increase the likelihood of behavioral change.

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## Introduction

The prevalence of childhood overweight and obesity is increasing rapidly, which is recognized as

a threat to public health [1, 2]. It is therefore important to develop and evaluate interventions that can counter these worrying trends. Because overweight and obesity is difficult to treat and often tracks into adulthood [3, 4], prevention strategies are best targeted at children. Additionally, studies suggest that most children are at risk of weight gain, thus strategies to prevent overweight and obesity will benefit the health of all children [2]. Increases in overweight prevalence rates are likely caused by energy imbalance [2, 5]. The only two modifiable elements of the energy balance are food intake and activity-related energy expenditure [5]. Preventive strategies should therefore focus on factors that affect eating and physical activity behaviors. The 'identification and prevention of dietary- and lifestyle-induced health effects in children and infants' (IDEFICS) project is a multi-center European cooperation. The study is funded by the European Commission under the sixth Framework Program. One purpose of the IDEFICS project is to provide detailed insight into the distribution of diet- and lifestyle-related diseases and disorders such as overweight and obesity in young children. A second purpose of IDEFICS is to develop, implement and evaluate a community-based intervention program aimed at promoting healthy eating and physical activity to prevent overweight in 2- to 8-year-old children of eight different European cities. The present study focuses on the results of the formative research conducted as a first step in developing the dietary components of this European community intervention. Physical activity-related results are presented elsewhere [L. Haerens, I. De Bourdeaudhuij, G. Eiben, *et al.*, Submitted].

Most previously conducted overweight preventing interventions for children have taken place in schools [6–9]. Studies that incorporated whole-school approaches including curriculum, policy and environmental strategies appeared to be the most effective [10, 11]. However, there is a general lack of proof for interventions to be effective in younger children and there is little experience with the use of a whole-community approach. Social-ecological theories [12] emphasize that personal, social and environmental factors are interacting. The IDEFICS

intervention will incorporate this theory by combining environmental and individual interventions and by targeting individuals, families, schools and the community at large. IDEFICS will thus be the first international study implementing a standardized community-based multi-component physical activity and healthy eating intervention for younger children (aged 2–8 years old) in eight different countries.

Since behavior cannot be changed directly, the first step in most health promotion planning models like the intervention mapping protocol [13] is to get insight into important influencing factors or determinants of the targeted behavior. A literature review revealed that personal (e.g. knowledge, self-efficacy and taste preferences), institutional (e.g. school policies), socio-environmental (e.g. parental modeling, influence of peers) and physical environmental factors (e.g. availability and accessibility) are all related to eating behaviors in older elementary school children and adolescents [14–18]. However, there is a general lack of studies investigating influencing factors for eating behaviors in younger children. For the present study, focus group interviews were used to describe important determinants of eating behaviors among younger children (2–8 years old). The social-ecological theory [12] was accommodated by examining the perspective of different actors (community leaders, parents, teachers and children), which is essential for the development of a community-based intervention.

This article presents the parent and child focus group results related to dietary behaviors. Focus groups with parents and children were conducted in the intervention cities of the eight participating countries. Given the complexity of differences in geographical and cultural characteristic, the focus group research aimed at describing important changeable influencing factors for dietary behaviors among young children in order to determine the best approaches for developing and implementing a standardized intervention that is feasible for each of the intervention contexts and populations.

## Methods

Each of the eight field centers out of eight different countries involved in the IDEFICS intervention study

approved the focus group protocol and conducted the focus group research. Countries were geographically spread across Europe.

Centers involved were University of Bremen (Germany), University of Pécs (Hungary), National Research Council (Italy), Research and Education Institute of Child Health (Cyprus), University of Zaragoza (Spain), National Institute for Health Development (Estonia), Göteborg University (Sweden) and Ghent University (Belgium). The latter was responsible for developing the focus group protocol and functioned as coordinating center for the focus group research. The comprehensive list of the partners within the IDEFICS consortium is provided in the Appendix.

Focus groups were conducted between February 2007 and April 2007 and were conducted in the same areas as where the future implementation of the interventions is planned. All sessions were audio taped with oral consent of the participants. To ensure quality of focus group interviews, a cd-rom with a copy of all audio tapes was made available for the coordinating center. Focus groups occurred at both the individual (6- to 8-year-old children) and the family level (mothers and fathers of 2- to 4-year olds and 6- to 8-year olds).

A key concern with multi-center studies is the issue of standardization. To obtain standardization, a study manual with requirements and methodology was written and distributed to each of the centers. The manual was based on established guidelines [19–21] and consisted of detailed practical instructions on topics like sampling and recruitment, location and settings, tape equipment and duration of sessions. It also included detailed information for the moderators on how to prepare and lead the focus group discussions. The manual furthermore included semi-structured questioning routes that were developed to ensure consistency in questions asked across groups [19–21] and a one page-long demographic questionnaire that had to be filled out by parents participating in the focus groups. Due to the age-related problems with filling out questionnaires, demographic variables [e.g. social economical status (SES)] were not assessed among children.

Questioning routes were developed in accordance with established guidelines [20, 21] and were pre-tested for understanding and duration in one group of children and parents at the coordinating field center. The questioning route for children covered the following topics: food preferences (at home and at school), availability (at home and at school), rules (at home and at school) and existing types of education at school and consisted of one opening question, one transitional question and seven open-ended key questions related to each of the above cited topics. Optional questions were added to each key question to enhance discussions. The questioning route for parents covered the following topics: channels for information, barriers and facilitating factors for their child to eat (un)healthy (at home and at school), availability (at home and at school), food rules (at home and at school), shopping, motivators for behavioral change and role of the school, teachers and parents. The questioning route for parents consisted of one opening question, one transitional question and 10 open-ended key questions related to each of the above mentioned topics. Again, optional questions were added to enhance the discussions.

Focus groups were led by a moderator. The moderator was responsible for facilitating the group discussions; all moderators were familiar with the research topic and the goals of the study. A co-moderator was responsible for taking notes during the focus group sessions. After each focus group session, the moderator and co-moderator debriefed; they described the members of the focus group and any notable circumstances that influenced the discussions. Among children, homogenous focus groups were held according to gender. The focus groups with parents were heterogeneous with respect to gender, but homogenous according to SES, because people of similar backgrounds may feel more comfortable in talking to each other. SES was determined through the channels used to recruit the parents. Parents of low SES were recruited through kindergartens or schools in deprived city areas or through organizations that work with this specific group such as community centers. The assessment of educational level through the demographic

questionnaire confirmed that this strategy worked as parents in the low SES groups had significantly lower educational background ( $t = 3.4, P < 0.001$ ).

Table I gives an overview of the focus groups conducted for this study. The entire focus group session also included questions on physical activity and stress and lasted for  $\sim 2$  h among parents, whereas with children shorter sessions were used ( $\sim 30$  min). Maximum efforts were made to conduct the focus groups in an empty comfortable and neutral room.

### Data analyses

Descriptive statistics, using SPSS, were used to analyze demographic data. Key findings of the focus groups were identified through independent reviews of focus group summary reports. Focus group summary reports were written using a standardized template that was developed for each of the moderators and co-moderators to complete in English based on the audio tapes of the sessions in the original language. The extensive summary reports for each center detailed all tape recorded results around the key questions using the standardized templates. Two researchers then separately analyzed and summarized the information available from each of the eight summary reports. Summary reports were compared and were generally consistent between the two researchers.

## Results

### Participants

Twenty focus group discussions with a total of 81 girls and 74 boys were conducted; the number of participants per focus group ranged from 5 to 17. Thirty-six focus group discussions with a total of

189 parents (28 men, 161 women; age =  $36.0 \pm 7.2$ ) were conducted. Of the 189 parents, 106 parents (56.1%) were parents of 2- to 4-year-old children and 83 (43.9%) were parents of 6- to 8-year-old children. Each site conducted two separate focus group sessions with parents of medium SES; the number of participants ranged from 5 to 12. Five sites conducted two focus group sessions with parents of low SES; the number of participants ranged from 2 to 10. In three countries (Sweden, Italy and Cyprus), no focus groups with parents of low SES could be conducted due the population being generally medium SES.

Next to the personal and family related factors, three groups of environmental factors were distinguished: (i) socio-cultural; (ii) institutional; and (iii) physical environmental factors (see Figure 1). The results of the focus groups are presented below following the key themes of the questioning routes, starting with themes that were discussed among children and parents (rules and availability), followed by themes specific for children (preferences, nutrition education) and themes specific for parents (channels for information, barriers and facilitating factors, role of school-family, information about shopping and influencing factors for behavioral change).

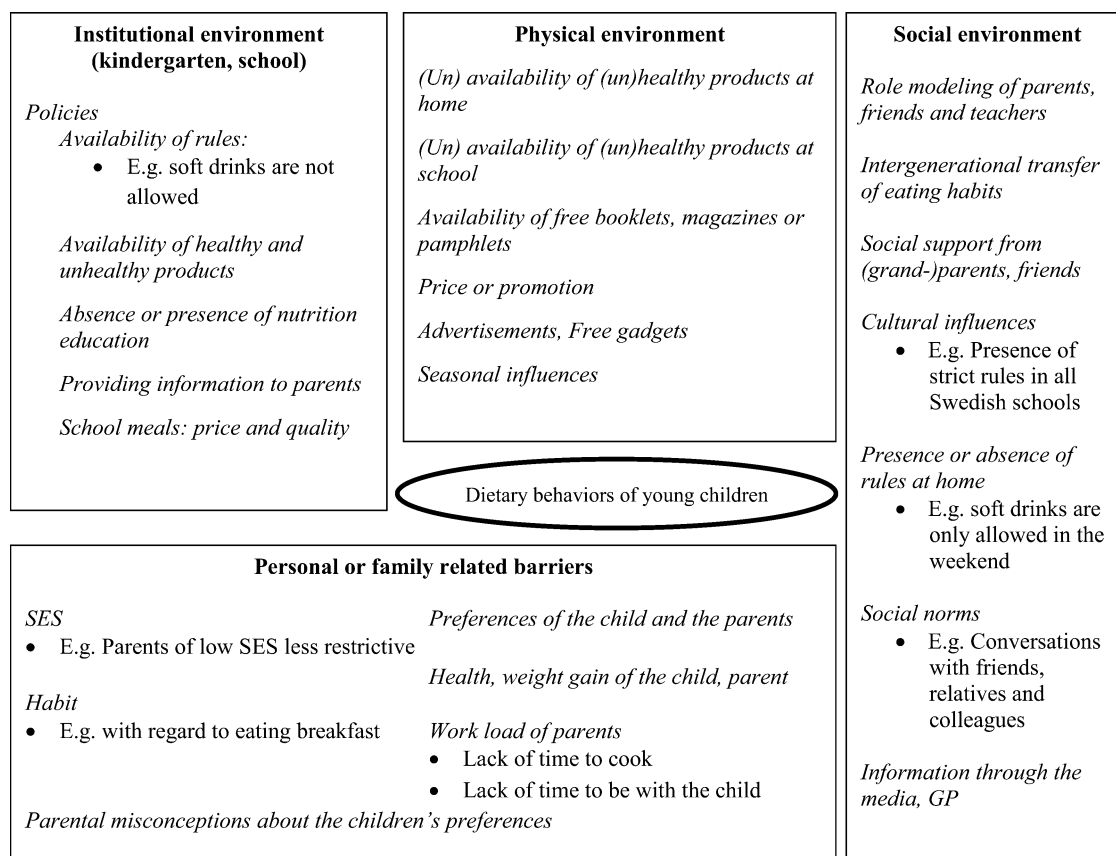
### Findings among parents and children

#### *Rules regarding food consumption at home*

In all countries, some of the parents and children mentioned the presence of rules at home, although in each of the countries there were also parents mentioning not having any rules at all. Only children participating in the focus groups in Germany appeared not to be aware of rules regarding food

**Table I.** Overview of the focus groups conducted in each of the countries

	Participants	Gender	SES	Number of participants
Focus Group 1	6- to 8-year-old boys	Only boys	Select children from schools	5–14
Focus Group 2	6- to 8-year-old girls	Only girls	in regions with lower welfare	5–17
Focus Group 3	Parents of 2- to 4-year olds	Mixed/only female	Low SES	4–10
Focus Group 4	Parents of 2- to 4-year olds	Mixed/only female	Medium to high SES	5–12
Focus Group 5	Parents of 6- to 8-year olds	Mixed/only female	Low SES	2–8
Focus Group 6	Parents of 6- to 8-year olds	Mixed/only female	Medium to high SES	15–11



**Fig. 1.** Environmental (physical, institutional, social) and personal influencing factors for healthy eating among young children.

consumption at home, even though parents did mention and specify some rules.

Most frequently mentioned rules by children and parents were children having to ask for permission before they eat or drink and limits on the consumption of unhealthy food products (e.g. soft drinks are only allowed in the weekend). Some parents mentioned that their children are allowed to consume healthy products (e.g. drinking water and eating fruit) without asking. Other rules mentioned by parents were having family meals, no snacking before meals, not eating while watching television, having to taste everything and hygienic rules (e.g. washing hands before dinner).

Parents of medium to high SES more often reported to have three fixed meal times; their children more often have to taste everything and sweets are

more often forbidden especially before meals. Parents of low SES tend to be less restrictive toward unhealthy food products as they also want to demonstrate to their child that they are not disadvantaged.

#### *Rules regarding food consumption at school*

Only in Sweden, parents mentioned having strict rules in the schools. Most parents mentioned that there are no clear rules and policies at their children's schools (Hungary, Estonia, Italy) or mentioned the existence of rules, but argued that these rules were often not followed by everyone (Spain, Belgium, Germany). The most common rules were sweets, soft drinks or chewing gum are not allowed (Belgium, Cyprus, Estonia, Germany, Hungary, Spain, Sweden), drinking or eating during teaching hours is not allowed (sometimes water is allowed)

(Belgium, Cyprus, Italy, Spain) and during meals children have to taste all food items (Belgium, Spain). Rules were mentioned to be stricter in kindergarten when compared with elementary schools (Cyprus, Belgium), and in most countries, there was a great variability between schools ranging from having no rules to having strictly followed rules (Cyprus, Spain, Belgium, Estonia, Italy).

#### *Availability of food products at school*

Some parents mentioned the possibility to buy beverages or snacks at school (Estonia, Germany, Hungary); in other countries (Italy, Germany, Belgium, Spain, Cyprus), parents stated that all kinds of foods and beverages are brought from home to school. Only in Sweden, only healthy snacks such as fruits are allowed or available at school. Most of the parents and children mentioned that water is always available at school (Cyprus, Sweden, Spain, Belgium, Estonia, Italy).

#### *Availability of food products at home*

In most countries, children mentioned that there were all kinds of foods and beverages available at home (Italy, Cyprus, Belgium, Sweden, Germany). Regarding the type of beverage, children in most countries (Sweden, Cyprus, Spain, Belgium, Italy) mentioned juices, dairy products (milk, chocolate milk, drinking yoghurt ...) and water to drink. Some children also mentioned that they were allowed to drink soft drinks regularly (Cyprus, Belgium, Germany).

The responses regarding the food availability at home divided all parents into three major groups: (i) a group of parents only buying foods their children are allowed to consume, (ii) a group of parents buying soft drinks and snacks for special occasions and (iii) a group of parents buying everything because they do not want to deprive their children of any products. Low SES parents were more often situated in the third group.

### **Findings among children**

#### *Food preferences*

When children were questioned about their food preferences, they mentioned both healthy and unhealthy food products and beverages. It is clear that

they know what they should eat (what is healthy or unhealthy) but they often choose what tastes good. In some countries, peer influences seemed to play an important role in children's food choices.

#### *Nutrition education at school*

Only in two countries (Belgium and Spain), children mentioned that they receive lessons about healthy eating (fruit and vegetables, fish).

### **Findings among parents**

#### *Channels for information*

Interestingly, the most important sources of information mentioned by parents were socialization and education. Intergenerational transfer of eating habits and nutrition knowledge seemed to be important (most parents mentioned eating habits learned through the education of their own parents as an important source of information). In two countries (Italy and Spain), general practitioner was cited as the most important source for information, whereas in two other countries (Cyprus and Estonia) the pediatrician was called for advice only for illness or medical nutritional advice. Other channels named in most countries were media (radio, journals, internet, newspapers ...), free booklets and magazines especially from super markets or shops, pamphlets and the food pyramid. Conversations with friends, relatives and colleagues were also mentioned as important sources for information. There were, however, some controversial opinions regarding the role of media and television; some parents found it a good channel for information, whereas others argued that the information was not always reliable, sometimes contradictory, and overwhelming. They also mentioned the controversial role of advertisements and the contradictory information they got from different sources. In some countries (Sweden, Cyprus, Belgium, Germany), parents also mentioned getting information through schools or kindergarten.

#### *Barriers and facilitating factors for healthy eating at school*

Parents mentioned several barriers for healthy eating at school: the lack of regulations or policies

at school, unhealthy or low-quality school meals delivered by catering, availability of soft drinks and unhealthy snacks at school, high prices of school meals (low SES) and unhealthy treats for anniversaries. Again, the situation was exceptional in Sweden. In Sweden, there are clear regulations and policies (e.g. soft drinks are not allowed) and the food served at school is considered to be good, varied and healthy.

Group pressure was mentioned both as a positive and a negative factor. Peers or older children can function as a good example: ‘children are stimulated to eat healthy food products if they see other children eat those products’. On the other hand, some parents also mentioned that ‘they don’t want their child to be laughed at, because the child will be the only one who has to eat a healthy snack (e.g. fruit or vegetables)’. Parents of children in both age groups also mentioned that it is hard for children to bring fruit to school and that children are too young to prepare the fruit.

Most parents, however, said that the school is a good location to promote healthy eating. School food policies such as ‘offering healthy school meals’ were also mentioned as a facilitating factor (Estonia, Sweden, Belgium, Spain, Cyprus). Some parents mentioned that only healthy snacks were available at school and that their child was not allowed to bring foods and drinks to school. Some parents also mentioned that their child ate fruit during classes and that during meals they have to taste everything. In Estonia and Sweden, the school kitchen offers school meals for free. In Estonia, these meals are guaranteed by the local government and have to cover 35% of children’s daily needs. However, children can still choose to pay for buffet or snacks and there is a common mentality that school food is bad, cold and not popular to eat. In Sweden, however, children cannot choose to eat from a buffet; there is only one meal served. But what many children do is to not eat at all if they do not like the food.

#### *Barriers and facilitating factors for healthy eating at home*

Barriers for healthy eating at home were lack of time to cook due to busy working schedule, grand-

parents or other family members breaking the rules, unhealthy preferences of husbands, lack of money to buy healthy food products, difficulties with understanding food labels and availability of unhealthy food products. Some parents mentioned the fact that they were not with their children for most of the day as a major barrier: ‘We cannot control what they eat and their diet really depends on the place where they stay during the day’. In some countries (Belgium, Spain, Cyprus, Italy), parents also mentioned that children have clear preferences with a lack of variety in what they like: ‘They usually don’t like fruit and vegetables or water and it is often easier to give them what they want’. On the other hand, some parents also mentioned that their child liked everything (Belgium, Spain).

Often mentioned facilitating factors were parents being good role models, positive rules, (un)availability of (un)healthy food products, the habit of eating breakfast, offering healthy snacks in a child-friendly way (e.g. cutting fruit and vegetables) and offering water as a first choice to drink.

#### *Role of the school, teachers and parents*

In three countries (Hungary, Estonia, Germany), parents mainly thought that promoting healthy eating was their responsibility by providing healthy meals, acting as role models and teaching the children to eat healthy. However, most other parents emphasized that the school has the most important role in promoting healthy eating (Italy, Belgium, Spain, Cyprus). They thought the school should give guidelines to parents, set rules for everyone, make continuous efforts to give information and provide education. Parents especially stressed the importance of role modeling of teachers as their children are interested in what their teachers say. Some parents felt that the schools’ role is currently weak and that any actions taken are very spread out during the school year and thus small in effect (Belgium, Spain, Cyprus). In general, parents of 2- to 4-year olds were more positive about the current role of the kindergarten. Parents mentioned that kindergartens facilitate their children’s eating habit

through their food policies (e.g. products like biscuits, crisps and chocolates are not allowed).

### *Information about shopping*

Low SES parents mentioned that the following factors influence their shopping behavior: prices, promotions, seasonal changes and preferences of children and partners. Unhealthy food products are perceived as cheaper, more tasteful and easier available: 'We have to do other sacrifices to be able to buy healthy foods. We don't buy things children don't like as it is a waste of money if they don't eat it'. Parents of medium and higher SES were more influenced by quality than by price' they try to choose healthy products with few preservatives and artificial flavors or colors. Some parents mentioned that habits or weekly menus are influencing what they buy, others mentioned using shopping lists (Cyprus, Belgium, Sweden). Some parents mentioned to be influenced by advertisements, but in all countries parents were more influenced by quality-price relationships. Parents frequently mentioned that they try to avoid shopping with their children, as they are largely influenced by advertisements and free gadgets, and more unhealthy food products are bought (Spain, Hungary, Belgium, Estonia).

### *Motivators for behavioral change or factors that induce behavioral change*

The most important common motivator to change dietary behavior was the child's health (occurrence of diseases, medical advice, allergies ...) or child's weight gain. Others mentioned that they had to lose weight themselves, which was a motivator for behavioral change and cooking healthier meals. Other motivators were the media, friends, relatives, parents or teachers. Parents from low SES mentioned the critic of other parents, price and preferences of partners as an influencing factor for behavioral change. Some parents of medium to high SES mentioned that they were influenced by the new information or tips their child brings from school (Hungary, Germany). Parents also accentuated the need for new, innovative and stimulating information (Hungary, Belgium).

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## Discussion

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This article presents the IDEFICS parent and child focus group results related to dietary behaviors. The present study is unique because focus groups were conducted in eight different European countries. Focus groups were conducted as a first step in the intervention development as subscribed by the Intervention Mapping Protocol [13]. In general, results were in agreement with findings from previous studies [14–17], suggesting that personal (e.g. taste preferences), institutional (e.g. school policies), socio-environmental (e.g. influence of peers) and physical environmental (e.g. availability) factors were frequently mentioned as influencing factors for eating behaviors in children. Hence, the IDEFICS intervention should be aimed at influencing these factors in a positive way.

Regarding rules at home and school, differences within countries were larger than differences between countries. There was a great diversity ranging from not allowing the consumption of snacks and soft drinks to allowing everything implying no food rules in the home environment. Likewise schools ranged from having strict to having no rules regarding foods and drinks. So it is very likely that many children receive inconsistent messages from family and school. The same diversity was found for availability of healthy and unhealthy food products. This is a considerable problem as several studies have found that decreased availability of healthy food products, increased availability of unhealthy products and lack of rules at home and school were related to less healthy eating behaviors among children [16, 22–25]. Intervention strategies should therefore aim at creating a home and school environment in which healthy eating behaviors are the easiest choice; this can be achieved by making healthy food items available and by restricting access to soft drinks and snacks. Parents mentioned several barriers for healthy eating at school that were all in a way related to school food policies: lack of regulations or policies at school, unhealthy or low quality school meals delivered by catering, availability of soft drinks and unhealthy snacks at

school, high prices of school meals (low SES) and unhealthy treats for anniversaries. Schools should be motivated to design a clear and appropriate food policy that is explicitly communicated to the parents. It is preferred to involve parents in the development of these policies by considering their opinion. Parents should be informed about the importance of supporting the school food policies and be motivated to follow similar rules at home. Special attention should be given to develop good intervention methods to reach lower SES groups, who appeared to be the least informed group. Collaboration between teachers and parents can be organized through various seminars, workshops and group discussions; all should be aimed at enhancing consistency in the messages given to children. Additionally, collaboration between schools in the same community would enhance the uniformity of messages to parents and children. Individuals at all levels (parents, teachers, community leaders) should for that reason work toward the same goal. Negotiations with school principals will be necessary to change school food policies for each of the barriers cited by parents. These negotiations should be supported by good and concrete examples for principals and teachers to get started. The intervention developers could for example work out a fruit policy in order to enable children to buy fresh fruit or to offer fruit at certain time points during the school day. Other policy changes could aim at improving school meals and setting stricter rules according to snacking during breaks.

When compared with elementary schools, kindergartens appeared to have much clearer and appropriate food policies that parents were aware of and endorsed. Thus, improvement of school policies should in the first place focus on elementary schools. New policies are furthermore needed for teaching and reinforcing healthy eating messages in the classroom. In elementary schools, there was much room for improvement in nutrition education. For fruit and vegetable intake, several studies have identified knowledge as an important influencing factor [16, 26]. Hence, developing ready to use nutrition education lessons that can easily be incorporated into the classroom curriculum might

improve knowledge and skills of the children which might result in improved eating behaviors. The Australian ‘Body Basic’ [27] nutrition education program can serve as a valuable example on how to involve children, parents, teachers and health professionals when developing such an educational component. Additionally, teachers should also be informed and stimulated to promote healthy eating every day of the entire school year.

Interestingly, parents frequently emphasized that the school has a central role in promoting healthy eating in young children and assigned the main responsibilities for healthy eating promotion outside the family context. For that reason, there is a need to raise awareness among parents about their own role in promoting healthy eating. Parents influence children’s dietary behaviors in several ways: they decide what foods are available; they serve as an important role model and their parenting practices also influence children’s food intake [28–31]. In most countries, children not only consume most of their foods and beverages at home but also bring foods and beverages from home into school. Special attention should be given to parents of low SES as they tend to have more unhealthy food products available in the home environment and they tend to be less restrictive. This is a considerable problem as previous studies have shown that availability of unhealthy food products and permissiveness are related to less healthy food choices among children and adolescents [25, 27, 31]. Low SES parents should be taught skills on how to educate their children; this can be done by training sessions to help parents deal with their children’s food preferences and help maintain a balanced diet by setting realistic rules and regulations to children and not resulting to extreme measures like complete deprivation or absolute allowance of all products. Parents should be taught skills on how to communicate rules and prohibitions in order to enhance consequent education. Parents furthermore mentioned lack of time and finances to cook healthy as barriers for eating healthy at home. Again low SES parents require special attention as price concerns were more frequently mentioned as a barrier among that group. This is in line with findings from

another focus group study looking at barriers for fruit and vegetable intake among Dutch low SES and high SES adults [32]. Giving parents easy-to-prepare and cheap-to-buy healthy meals or snack ideas can overcome both time and financial constraints. This can be realized through cooking activities, providing a cooking book with simple recipes (e.g. recipes with deep frozen convenience foods) and providing tips for small changes (e.g. cut fruit and vegetables for children who are hungry before meals, tips on how to bring fruit to school).

In line with previous research among children [14, 17] and adolescents [18], focus groups with 6–8 years old children revealed that taste was important for children's food preferences. In contrast to most parents' perceptions, most children mentioned both healthy and unhealthy food products when they were questioned about their taste preferences. Hence, efforts should be made to make healthy products more available at home and school. Parents mentioned that children are influenced by gadgets or incentives that are attached to unhealthy food products; these strategies could also be transferred to healthy food products. Preferences for certain food items were also influenced by peers, which is in line with findings from other studies [review of 15]. Group pressure was mentioned both as a positive and a negative factor. This suggests that if healthy food products are eaten in a group, e.g. in the classroom, this might result in children copying healthy behaviors from other children. Also teachers should act as good role models by eating healthy food products with appetite and enjoyment.

Parents are getting their information on how to eat healthy from all kinds of sources. They mentioned incorporating eating behaviors through intergenerational learning, suggesting the need to inform and involve the whole family. Transferring information through the child to other family members might be an effective solution. Interventions aimed at getting grandparents, parents and children together might even be more useful. In two countries (Italy and Spain), medical counseling was cited as the most important source of information; in these countries, it might be useful to spread information for the parents through general practi-

tioners. Other frequently cited channels were media, free booklets and magazines especially from super markets or shops, pamphlets and the food pyramid. There were, however, some controversial opinions regarding the role of media and television because of the contradictory, less reliable and overwhelming character of some of the information. Hence, when setting up a large media campaign involving all previous mentioned channels, special attention should be given to make a distinction between the intervention campaign and less reliable or contradictory information provided by certain media such as television. To do so, the IDEFICS logo can be used on all documents. Kindergarten and schools should also be motivated to spread information to the parents. Teachers should act as a pedagogues and counselors instead of critical observers in order to improve cooperation.

This focus group research had some limitations. Key findings of the focus groups were identified through independent reviews of focus group summary reports that were written in standardized templates and two researchers separately analyzed and summarized all the information. However, due to financial constraints and the eight different languages, no written transcripts were made, making the use of data analysis programs such as NVIVO impossible. This may have limited the validity of the data analyses. All participants were selected from one of the eight intervention cities, thus the results may not be generally representative for each of the countries. However, issues of representative samples were considered as less important than our purpose to gather views from different groups of people in the intervention areas. Due to language differences, each center had its own moderator and co-moderator who guided the interviews. Differences in experience and interview style may have affected the flow and content of the interviews [33]. However, all moderators used a well-structured interview guide and could ask for support through e-mail.

The use of focus group discussions can be seen as a strength of this study for several reasons. By using this method, it was possible to gather extensive information in a relatively short period of time. Furthermore, the reaction and discussion between

group members has the advantage of exposing data that would remain uncovered with other research methods. Other methodological strengths include the semi-structured pre-tested questioning route, the standardized study protocol, the availability of information from children and parents, the inclusion of parents from high and low socio-economical backgrounds and the international diversity of the study population.

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### Conclusion

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This focus group research provided valuable information to guide the first phase in the intervention development. Findings across countries were consistent, in that there was a wide variety in the results within countries. The variability within countries stresses the importance of involving different actors at different levels to spread consistent messages to the children and their parents. The results of the focus group discussions showed that interventions should be tailored both at the personal and environmental level to increase the likelihood of behavioral change. The identified changeable influencing factors for children's were personal (e.g. taste preference, lack of time, lack of finances), institutional (e.g. school policies), social-environmental (e.g. peer and parental influences) and physical-environmental (e.g. availability) factors.

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### Conflict of Interest Statement

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None declared.

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