



HabEat

Determining factors and critical periods in food habit formation and breaking in early childhood: a multidisciplinary approach

Grant agreement number: FP7-245012

**Medium-scale Collaborative Project
SEVENTH FRAMEWORK PROGRAMME**

Priority: Food, Agriculture and Fisheries, Biotechnology

Deliverable D22 HabEat symposium

Due date: M52

Actual submission date: M53

Project start date: 1st January 2010 **Duration:** 52 months

Workpackage concerned: WP4

Concerned workpackage leader: INRA and IT

Dissemination level: PU (public)

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I. Objectives

The HabEat symposium is part of the task T4.1: HabEat communication. The objectives were to communicate and validate the project findings and proposed guidelines.

The symposium reported the final results of the HabEat project, which aimed to understand better how eating habits and food preferences are formed during the early years of life. Practical implications of these results were presented. How these implications could be translated into recommendations concerning feeding practices was discussed with the participants.

The aim of this symposium was also to exchange ideas and to cross views with results from other research works. Thus, the programme was opened to presentations in the form of poster presentations.

Early childhood professionals, paediatricians, political decision-makers in charge of defining nutritional policies, baby food industries, researchers as well as representatives of parents associations were welcomed.

The programme was divided in two topics: “Infant feeding & complementary feeding” and “Eating behaviour in toddlers and young children”.

II. Symposium organisation

Planning and organization of the workshop

Key steps in event planning	INRA-INRA Transfert
Development of the event concept (purpose of the event, type of the event, audience type, date and venue - first suggestion)	Executive Committee members
Determination of the feasibility of the event (cost, facilities & equipment)	INRA-INRA Transfert
Event planning (set dates-final, times, deadlines, consultation with project partners & external participants for the input)	INRA-INRA Transfert
Event preparation	INRA-INRA Transfert-HabEat partners-Vitagora
Publicity	INRA- All HabEat partners-Vitagora

Conference information

Title: "Improving infant and child eating habits, encouraging fruit and vegetable intake. Translating evidence into practical recommendations"

Date: 31st March – 1st April 2014

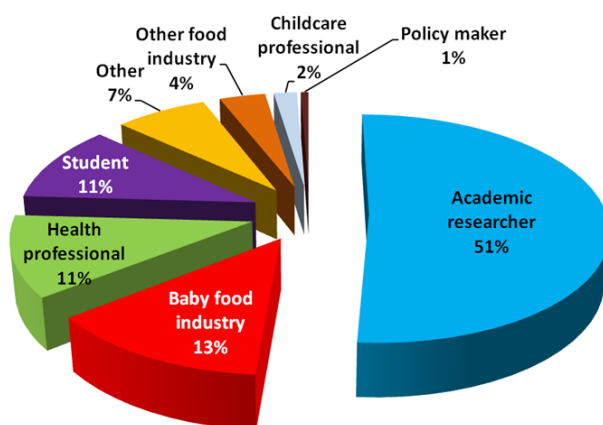
Venue: Palais des Congrès
3, boulevard de champagne
21078 Dijon
France

Conference website address (Annex 1):

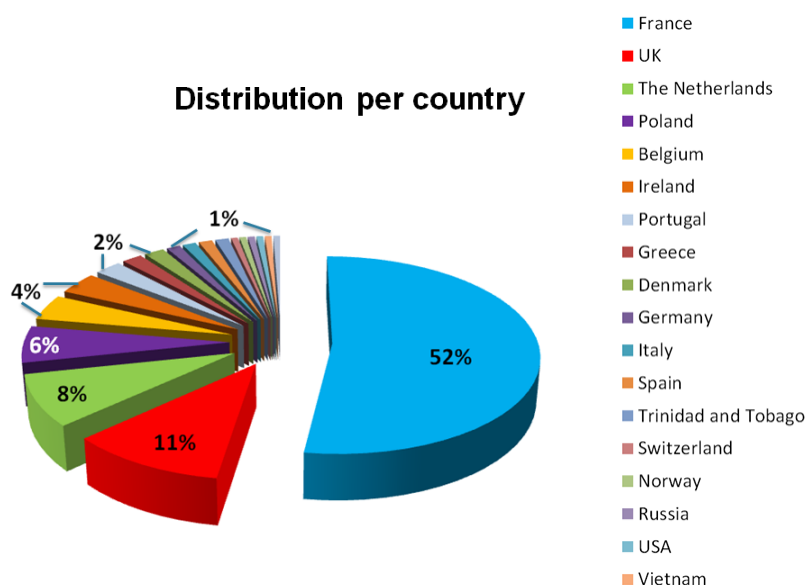
<http://www.habeat.eu/news.php?news=HabEat-final-symposium>

Audience: Around 150 participants (Annex 2)

Distribution per category



Distribution per country



Official Invitation

For dissemination of the information about on-going event we have used official invitation and custom invitations for invited speakers and round tables members. General invitations were distributed via email.



We have communicated about the symposium through several websites: INRA, Vitagora (French cluster on food and health), Qualiment (French network for food innovation), European Sensory Network (ESN), Interfel (French Interprofessionnal of Fruit and vegetable), ACTIA (Association of technical coordination for agro-food industry), Sens&Co (Association for professional of sensory analyses), International society for developmental origins of health and disease (DOHaD)...

Committees

(Available on <http://www.habeat.eu/page.php?a=habeat-symposium-06>)

For ensuring clear and smooth organization of the symposium two committees that had different responsibilities and roles were set up.

These committees were:

- Organizing Committee (OC)
- Scientific Committee (SC)

Organizing Committee:

Role of the OC was to conduct all aspects of the technical and logistical program of the HabEat symposium. Its responsibility was to prepare the programme, to disseminate the information about the symposium, to send the invitations to invited speakers, to arrange financial issues, to produce the symposium communication material.

Members of Organizing Committee:

- S. Issanchou, INRA
- C. Sautot, INRA Transfert
- C. Bouvel, Vitagora
- E. Lustrat, Vitagora

Scientific Committee:

Role of the SC was to design the scientific scope of HabEat symposium. Its responsibility was to prepare the list of plenary and round table speakers, selection of symposium topics, scheduling of sessions, review and selection of received poster abstracts, chairing the symposium sessions, and disseminate the information about the symposium. Its responsibility was also to collaborate with the OC regarding invited speakers and scheduling of the conference session.

Scientific Committee:

S. Issanchou, INRA
M-A. Charles, INSERM
M. Hetherington, ULeeds
G. Zeinstra, DLO-FBR
P. Møller, UCPH
L. Cooke, UCL
C. Lopes, UPorto
K. de Graaf, WUR
Y. Manios, HUA
P. Emmett, UNIBRIS

Invited speakers

(Available on: <http://www.habeat.eu/page.php?a=habeat-symposium-08>)

We invited two key notes speakers:

The opening lecture was conducted by Benoist Schaal from CNRS, France.

The closing lecture was conducted by Kim Fleischer Michaelsen from University of Copenhagen, Denmark.

We invited speakers for the round tables.

Round table 1: "Infant feeding & complementary feeding"

Hugo Weenen from Danone, The Netherlands

Nathalie Martin from Nestlé Research Center, Switzerland

Oren Gostiaux from the European Parental Association, France

Jo Cecil from the University of St Andrews, Scotland

Round table 2: "Eating behaviour in toddlers and young children"

Cécile Bonhomme from Lactalis Nutrition Europe, France

Dorota Sienkiewicz from the European Public Health Alliance, Belgium

Laura Fernandez from the European Food Information Council (EUFIC), Belgium

Emma Haycraft from the Loughborough University, United Kingdom

Round table 3: "Translating science into practice"

Michel Chauliac from the Directorate-General of Health of the Ministry of Social Affairs and Health, France

Marie-Laure Frelut from the European Childhood Obesity Group, France

Kim Fleischer Michaelsen from the University of Copenhagen, Denmark

Important Dates

Abstract submission-extended:

OPEN until February 28th, 2014

Announcement of accepted abstracts:

March 3rd 2014

Registration

From December 2013 until March 7th 2014

Topics and Scientific Program

(Available on: <http://www.habeat.eu/page.php?a=habeat-symposium-02>)

The HabEat symposium addressed two scientific topics, three sessions dedicated to round table discussion and two poster sessions.

Scientific topics:

- 1/ Infant feeding & complementary feeding
- 2/ Eating behaviour in toddlers and young children

Round tables:

- “Infant feeding & complementary feeding”
- “Eating behaviour in toddlers and young children”
- “Translating science into practice”

Poster sessions:

Posters were displayed in the poster area for the entire time of the symposium. Two one-hour sessions were specifically devoted to poster viewing. Poster authors were requested to be present at their poster during one of the two poster sessions.

Considering our objectives, the programme was set up in order to have a balance between the scientific presentations of the HabEat results, and discussions on the practical implications of these results and their translation into recommendations concerning feeding practices.

The detailed agenda on the symposium flyer is given in Annex 3.

Round table details

Monday 31st March

Session 1 “Infant feeding & complementary feeding”

Moderator: Marion Hetherington

Members of the discussion panel: Hugo Weenen (Danone), Nathalie Martin (Nestlé), Oren Gostiaux (European Parental Association), Jo Cecil (University of St Andrews).

First round: the members of the panel introduced themselves and presented their interest in the project and/or the symposium. Presentation of slides with their picture and CV was done at the same time.

Carla Lopes, University of Porto, Portugal presented what has been done during the project to disseminate the results and the procedure used to develop the recommendations. Then, she focused on infant feeding and complementary feeding, and presented the current guidelines for this age range in the six countries involved in the project, the key findings of HabEat and the related recommendations.

Second round: the members of the panel were asked to react to the recommendations and to answer the following questions.

- What do you think about these recommendations?
- What could be the main barriers for the parents/caregivers in following these recommendations? How can we help parents/caregivers overcome these difficulties?

Presentation of future research by Carla Lopes

Third round: the members of the panel were asked to comment on future research.

The moderator opened the discussion to the attendees and the HabEat speakers as well the members of the panel of discussion could answer the questions and make comments.

Short conclusion by the moderator has been done.

Tuesday 1st April

Session 2 “Eating behaviour in toddlers and young children”

Moderator: Gerry Jager

Members of the discussion panel: Lactalis (Cécile Bonhomme), Dorota Sienkiewicz (European Public Health Alliance), Laura Fernandez (European Food Information Council (EUFIC)), Emma Haycraft (Loughborough University).

First round table: the members of the panel introduced themselves and presented their interest in the project and/or the symposium. Presentation of slides with their picture and CV was done at the same time.

Pauline Emmett from the University of Bristol, UK summarized the current guidelines for 2-6 year old children in the six countries involved in the project, pointing out that they are relatively general and they have no information on “how”. Then she presented the key findings of HabEat and the related recommendations showing that HabEat is able to give answers on how, not just on what.

Second round: the members of the panel were asked to react to the recommendations and to answer the following questions:

- What do you think about these recommendations?
- What could be the main barriers for the parents/caregivers in following these recommendations? How can we help parents/caregivers overcome these difficulties?

Presentation of future research by Pauline Emmett

Third round: the members of the panel were asked to comment on future research.

The moderator opened the discussion to the attendees and the HabEat speakers as well the members of the panel of discussion could answer the questions and make comments.

Short conclusion by the moderator has been done.

Session 3 “Translating science into practice”

Moderators: Sylvie Issanchou and Kees de Graaf

Members of the discussion panel: Michel Chauliac (Directorate-General of Health of the Ministry of Social Affairs and Health), Marie-Laure Frelut (European Childhood Obesity Group (ECOG)), Kim Fleischer Michaelsen (University of Copenhagen)

First round table: the members of the panel introduced themselves and presented their interest in the project and its findings. Presentation of slides with their picture and CV was done at the same time.

Pauline Emmett from the University of Bristol, UK presented some results from the ALSPAC cohort collected during childhood and adolescence. This work showed that consuming an energy-dense, high-fat, low-fibre dietary pattern, which is characterized by a low intake of fruit and vegetables, is associated with increasing adiposity during childhood and adolescence. Thus increasing intake of fruit and vegetables is of paramount importance.

Second round: the members of the panel were asked to indicate possible ways to disseminate further these recommendations, to reach different target groups especially those being most at risk.

The moderators opened the discussion to the attendees and the members of the panel of discussion could answer the questions and make comments.

Minutes of the round tables

Round table 1:

RECOMMENDATIONS DISCUSSED

1. Continued efforts should be made to continue breastfeeding
2. Introduce plain vegetables as first foods in the complementary feeding period
3. Use repeated exposure to a variety of vegetables to increase acceptance of vegetables

SUMMARY OF THE KEY POINTS OF THE DISCUSSION

Hugo Weenen: the HabEat project succeeded in providing specific recommendations to both health professionals and parents. There is a huge step between theory and practice and the recommendations are a first step toward putting this in practice.

Nathalie Martin: the nice point of the HabEat project findings is that they provide additional evidence to previous research Nestlé has based its communication and product development on. They especially confirm through different approaches (analysis of cohort data and different interventions) the impact of repeated exposure (Maier et al., 2007, Food Quality and Preference, 18, 1023-1032) as well as the influence of breastfeeding and early variety in the vegetables presented (i.e. Maier et al., 2008, Clinical Nutrition 27, 849-857). For example, Nestlé has already extended their range of products in order to provide more variety in baby foods; now products that are often considered as not very much liked by infants and not easy to prepare, such as eggplant and artichoke, are available. It is important that the HabEat recommendations are widely disseminated to different targets: governmental health authorities, health care practitioners, and consumers. The communication should be adapted to the different targets and especially be very concrete and easy to use (tips, videos) for consumers.

Jo Cecil: well-structured guidelines are well received by parents, e.g. those given during the interventions studies in the VIVA project (V is for vegetable: applying learning theory to increase liking and intake of vegetables - EU FP7 Marie Curie: 'Industry-Academia Partnerships and Pathways' (IAPP): Jun 2009 – May 2013) because they are precise. Parents like to be given proof that repeated exposure works and specific quantification of the number of exposures required. It helps mothers to be relaxed and to understand that the introduction of complementary foods is a journey.

Lucy Cooke had similar comments from parents when implementing the Taste Study of the HabEat project and indicated that parents are looking for ready-made solutions.

One suggestion given was to have a brochure per age group. For targeting parents, one option could be that leaflets based on the booklet and also on information available on the public web site of the project could be produced.

Oren Gostiaux: It is clear that we should follow what the theory states but in practice it's hard to achieve. Demands on time and work mean that parents spend less time with their children but they have the responsibility for their child's nutrition. Thus, what is supposed to be done is not always practical to be done in real life settings. We need to find a way to encourage breastfeeding despite difficulties/ obstacles in everyday life. We should aim to change behaviour via our changing culture, and thus social media could help toward this direction.

Hugo Weenen: the clear barrier is implementation of a recommendation. First, you need to make the recommendation and then to translate/ communicate it to parents / stakeholders taking into consideration cultural or other aspects of the targeted population. Furthermore, the means via which parents will get this information, e.g. via paediatrician, is also important and requires further investigation.

It was suggested, in the audience, that young women and men could be trained by teaching healthy cooking in schools, i.e. to train the next generation. However, it was underlined that it is important to use the best period for behavioural change.

It was pointed out by Jo Cecil that shifting the “window of opportunity” earlier, i.e. to mothers during pregnancy could be more successful in increasing intake of fruit and vegetables by children. This suggestion was already made during the discussion session of the 2nd stakeholder workshop that was held on the 27th September at the University of Porto (see Newsletter no 5). Nathalie Martin also suggested that the communication could target pregnant mothers.

Marion Hetherington suggested that for succeeding in encouraging parents to follow recommendations, we have to identify their barriers. Carel Vereijken (Nutricia Research) suggested that what is lacking is asking parents why they don't follow advice, and that parents could be asked directly what barriers they are facing. Using this information would help to build a programme for behaviour change.

For Jo Cecil one barrier is to persuade mothers to persist in providing vegetables/ fruit to their children when this is not successful at the first time.

Oren Gostiaux underlined the problem of cost: “Promotion of health becomes more and more complex: eating well costs a lot. More and more people cannot buy healthy foods.” When a product is bought and refused, it is difficult to tell people facing economic problems to buy again the same product that could be again refused by their child.

For Marion Hetherington individual differences are important to take into account; in particular it is important to take into account that mothers and fathers may have different perception in accepting food-persisting.

Another point discussed was “Who should be the message carrier?” rather than targeting directly the parents, it was suggested that paediatricians could be a way to disseminate the booklet. It was also suggested that for the health professionals, there are may be too much information in the booklet; there is a need to simplify the booklet. Nathalie Martin raised the question of how to involve the health-care system and policy makers (see the 3rd discussion session in which Michel Chauliac, working at the French General Directorate of Health and coordinator of the National Programme on Nutrition and Health, participated).

Jo Cecil pointed out that it is important to normalise the message that the feeding strategy may not work and suggested giving tips to follow if the first strategy does not work.

It was also mentioned that there is certainly a need to give recommendations for parents with difficult to feed children. Future research in this area is necessary.

Nathalie Martin asked if the booklet will be translated in different languages. Sylvie Issanchou answered that yes, it is planned to translate it into the languages of the countries involved in the project as it has been done for the parents' page on the public website. For other languages and dissemination in non-participating countries, nothing has been planned yet.

Nathalie Martin pointed out that it is important to adapt messages so that they will resonate in different countries. Marion Hetherington mentioned that in the UK, where the habit is to offer cereals as first complementary foods, there is a real cultural barrier whereas in Portugal offering vegetable soups as first foods is part of the culture. However, the discussion panel agreed that producing recommendations that will be relevant for different cultures is another project. However, the present booklet could be used as a basis for producing these guidelines adapted to different cultures.

In the audience, Wen Lun Yuan (CSGA) raised the question of the difference between homemade and commercially made foods regarding acceptance. Pauline Emmett answered that data from the UK ALSPAC cohort revealed that babies fed with home-prepared fruits and vegetables had a higher intake of fruit and vegetables later in childhood than those fed

ready-prepared baby foods. However, the reason behind this result is not clear and future research is needed on this topic. Hugo Weenen mentioned that in practice most parents use both.

In the audience, Julien Delarue (AgroParisTech) underlined the importance of introducing sensory complexity in terms of flavour (mixtures of vegetables in the form of soup, purée) and in terms of texture. He pointed out that very slight changes in textures can induce drastic changes in liking.

Round table 2:

RECOMMENDATIONS DISCUSSED

- 1) Use repeated exposure to a novel vegetable to help a child learn to enjoy the taste of that vegetable. When possible offer children a choice of two or more vegetables.
- 2) Parents should persist in offering children who are difficult eaters a variety of food and textures to help them learn to like a range of foods.
- 3) Food should be offered to a child in response to their feelings of hunger, and not used as reward for a good behavior or any other reason.
- 4) Avoid offering energy dense snacks before or after meals. If children are hungry before a meal, vegetables could be offered as a snack/appetizer.

Laura Fernandez welcomed the recommendations, which are a great document written in an accessible way. The project has brought useful key messages like start as early as possible and the importance of variety. The 3 Ps “Persistence – Patience - No Pressure” are clear take home messages. She pointed out that it is helpful to phrase messages in a positive way instead of in a negative one. For example, the fact that energy dense snacks are not completely forbidden but they should not be offered before meals. HabEat should also communicate their results to the European Epode Network, which could be a potential user of the results.

Cécile Bonhomme identified as a possible barrier the actual practicality of the recommendations. For example, if the parents cannot use food as reward, what else can they use? Parents also like information presented as ‘questions/answers’ because it is easier to understand. She also suggested that the information/recommendations should be homogeneous within the EU, even if there could be adaptations at a country level at a later stage.

Dorota Sienkiewicz identified the need for clear and simple recommendations. She mentioned that the recommendations are great but they need to be integrated to the broader food nutrition system in Europe. Parents are influenced by marketing, advertising and it is not easy for them to say yes or no, or to decide on things. We should not target just the parents but the Food System in the EU as a whole.

Emma Haycraft agreed that the recommendations are great but she stated that they should be adjusted so that they can be offered to a broader range of income. She identified the socioeconomic status as a possible barrier to the application of the recommendations: poor parents do not want to buy vegetables repeatedly if they end up in the bin. She also mentioned that it is important to teach parents, for example by telling them not to be disturbed by negative facial responses that a child can have when offered a food for the first time (*see page 10 of the HabEat booklet for the parents*).

Then, the discussion with the audience started.

There was a debate as to whether pregnancy is a good period for such recommendations to be given to the mother, and that midwives could also be involved. Laura Fernandez agreed with this suggestion also made during the first discussion session; she suggested

that pregnant mothers are more open and keen on changing behaviour. Dorota Sienkiewicz and some people of the audience indicated that this option has to be evaluated carefully because pregnancy is a very sensitive period of life. It was suggested by a member of the audience that the best period for educating the mother about infant feeding is 3-4 months after the birth of the child. Laura Fernandez agreed that we should not only focus on pregnant mothers and that the challenge would be communicate in an effective way the results to the different target audiences identified.

All members of the panel agreed on the fact that everybody should be targeted with the recommendations i.e. parents, health professionals, school canteens, and the whole of society with clear messages.

A member of the audience suggested that it would be a great idea to give discounted or free vegetables to pregnant women and parents of young children of lower socio-economic status. Again, there was a debate about the high price of fruits and vegetables and how this could be seen as a barrier for certain population groups, notably on low income and of low socio-economic status.

Dorota Sienkiewicz said that she believes in the promotion of a healthy balance diet in general and that she does not really agree with the formation for very specialized food products for special populations. Participants working in the food industry explained that they agree that there is room for both homemade foods and baby foods, in combination. Cécile Bonhomme said that children under the age of three are not little adults and should not be treated as such; they are indeed a special population with very specialized dietary needs.

Finally, it was concluded that the food industry could also help to disseminate the information to the right recipients. There was also a discussion on the sensory characteristics of the baby food products. It was underlined that efforts are made so that for the vegetable purées the taste of the main vegetable is identifiable. It is important because children must learn the taste of the vegetables that will be offered to them when they will grow up.

A paediatrician suggested that there is often no explanation of the rationale behind the recommendations and they should always explain the “WHY”. Emma Haycraft confirmed that it is important to explain to parents why they are being advised in a certain way. Gerry Jager and Pauline Emmett underlined that the importance of fruit and vegetables in the diet is addressed; actually the booklet begins by describing “WHY”.

Pauline Emmett asked the panel members if they think that a webpage could be a good idea. Emma Haycraft agreed with using electronic resources, but also using applications with expandable boxes that make it possible for parents to click on links they find interesting.

From the audience, Andrea Maier said that we need to engage not only the rational mind, but also the emotional mind. Thus, use fun stories, video clips etc. We have to remember that eating is a pleasure, too!

Dorota Sienkiewicz stated a concern shared by the non-governmental public health community regarding the fundamental principle of providing recommendations related to the whole food supply chain and a challenge therein to rebalance between a need/demand side for regular non-processed fresh fruit and vegetables and industry-supplied highly processed baby food – a phenomenon seen almost as functional, food for medical purpose, which it should not be if our goal is to increase and sustain intake of fruit and vegetables among the infant and child population lasting throughout their later life.

Concerning learning of different tastes, Cécile Bonhomme suggested that industry should communicate recipes to parents. She pointed out the fact that different sources of vegetables can be used - fresh, frozen etc. She underlined that frozen vegetables is a good option to prepare small portions and thus reducing waste.

Concerning the efficiency of any strategy, Gerry Jager suggested that for young children, we could perhaps focus on the fact that they agree to taste rather than on evaluating their intake.

Hugo Weenen raised two questions for future research: “What is optimum variety?” and “what is optimum repetition”.

Round table 3:

For Marie-Laure Frelut, the key message is to start early, i.e. at weaning. There is a need to give more explanation to people who take care of children but who haven't any training in this area, by explaining the rationale for the recommendations. For Marie-Laure, it is important in kindergartens to teach the paediatricians in charge of the surveillance because they are close to the caregivers. Thus, the recommendations will be implemented. This will not be the case if we try to target administrative people.

For Kim Fleischer Michaelsen, it is necessary to act in day-care and schools as it offers the possibility to reach everybody and to reach the poorer families. One idea would be to distribute fruit and vegetables in day-care centres.

For Michel Chauliac, it is necessary to start at a very young age, but also helping the family level (not only the children) to reach the recommended level of fruit and vegetable consumption. Information is good, but not sufficient and may be not the best way to reach the poorer target groups. The challenge is really to reach the poorer families. In France there are strategies to educate the population, there is an ongoing progress (this year) of translating scientific evidence to easy language and to disseminate among several target groups but we have also to increase the availability and the desire and the pleasure of eating fruit and vegetables. In France, we also target to decrease consumption of less healthy foods; thus, vending machines are forbidden in schools. The national recommendation is to avoid any snacks during the morning.

Another important issue is the taste of fruit and vegetables which was underlined by Kim Fleischer Michaelsen, and Michel Chauliac. This point was also raised by the audience.

Michel Chauliac and Kim Fleischer Michaelsen also agreed that to translate results into practice it is important to do small pilot studies and to be sure that they will work.

All participants agreed that implementation and dissemination of the messages should take into account the traditional roots of each country. Andrea Maier indicated that in Germany breastfeeding is not an issue but early introduction of variety would be very difficult because of cultural beliefs regarding allergies. Wrong or no knowledge was available; now it has changed but it takes time to change the mindset of health professionals.

It was also underlined that there is a need to adapt the message to the different target groups. Gerry Jager underlined that for adolescents, it does not work to say that fruit and vegetables will prevent cancer, but it will be certainly more efficient to say that fruits could be funny, etc., to explain why for their everyday life, not for long-term consequences. Whatever, the target group, Sylvie Issanchou pointed out the fact that there is a real need to promote the consumption of fruit and vegetables beyond the nutrition aspect.

For Michel Chauliac, it will be necessary to decrease fruit juice consumption in France. Of course, they are easier to consume than fruits but as explained by Kees de Graaf, they are not at all equivalent to fruits from a satiety point of view.

Concerning the question ‘How to disseminate/communicate HabEat findings across the different European countries?’ several comments were made by the panel member and the audience:

- We have to be powerful: rational but also emotional with a multidisciplinary team. More focused on pleasure than on nutritional positive effects of fruit and vegetables.

- To do a presentation in a European platform where we can reach several stakeholders.

- Laura Fernandez mentioned that if there is a scientific publication summarising the main results of HabEat, EUFIC could help disseminate the messages further. She also said she will help to put HabEat in contact to the head of the Epode network and with the European Commission Platform for action on diet, physical activity and health, which gathers the main European stakeholders that could be potential users of the HabEat messages.

Kees de Graaf underlined that in the Netherlands, it is not very easy to reach the Health council.

Michel Chauliac indicated that as the French Guidelines are presently under revision, it will be possible to implement the finding from HabEat. This will be done next year by incorporating recommendations to help families; this will help also to disseminate the recommendations toward the professionals.

One person from the audience mentioned that the effectiveness of the Nutrition and Health National Programme should be assessed. Michel Chauliac answered that there are studies to assess this effectiveness, some measuring the knowledge, other consumption. We know that since 2008 the consumption of fruit and vegetables has been plateauing.

Venue and Accommodation

(Available on: <http://www.habeat.eu/page.php?a=habeat-symposium-03>
<http://www.habeat.eu/page.php?a=habeat-symposium-04>)

Venue:

Palais des Congrès
3, boulevard de champagne
21078 Dijon
France

Accommodation:

For easy and quick accommodation arrangement we prepared a list of hotels that are close to the conference place.

The conference participants were requested to arrange accommodation on their own. The provided list of hotels exclusively served as suggestion and it was not obligatory to choose among stated hotels.

Poster Call

(Available on: <http://www.habeat.eu/page.php?a=habeat-symposium-01>)

The purpose of this initiative was to promote the work on the early development of eating habits.

We have received 37 poster abstracts (Annex 4). The scientific committee decided to accept all of them.

Promotional material

(Available on: http://www.habeat.eu/media/file/Flyer_HabEat_Imprimable_V3.pdf)

- Conference flyer (Annex 3)
- Roll-up posters (Annex 5)

Conference flyer details:

Size: A5

Pint: colour, double side

No. of prints: 300

The flyer was distributed at the upcoming events and electronically using e-mail pools. As well, the flyer was uploaded on the conference website.

Roll-up posters details:

Size: 80 x 200

Pint: colour

No. of prints: 3

Two roll-up posters were displayed on the stage in the symposium room and one at the registration desk.

Symposium material

The symposium material consisted of:

- Symposium bag
- Badge ribbon and badge
- Symposium flyer (Annex 3)
- Symposium book of abstracts (Annex 6)
- HabEat book of parents (Annex 7):

http://www.habeat.eu/media/file/BookletHabEat_Electronic%20version.pdf

- HabEat Stakeholder leaflet (Annex 8):

http://www.habeat.eu/media/file/Brochure_stakeholders_FINAL.pdf

- Participants list
- Pen
- HabEat USB key
- Dijon city promotional material
- INRA Dijon center leaflet

Video

A video of the whole symposium and video interviews with WPs leaders have been done:

- Marie-Aline Charles – WP1 leader
- Marion Hetherington – WP2 leader
- Gertrude Zeinstra – WP3 leader
- Sylvie Issanchou – WP4 leader and project coordinator

The video will be available on the HabEat website and disseminated on HabEat partners website.

III. Conclusion

The HabEat symposium has met its objectives. It has brought together HabEat project partners and external participants from relevant scientific and technological disciplines (Academic researchers, paediatricians, baby food industry representatives, childcare professionals, health professionals, students, etc).

We managed to conduct all aspects of the technical and scientific program of the HabEat symposium as planned. Information was disseminated widely; as well part of the video will be disseminated as soon as we receive them from post-editing process. Invited speakers significantly contributed to the symposium program.

The combination of lectures and round tables provided validation of the recommendations and to give suggestions on how to disseminate them widely.

Annex 1: The symposium website

URL: <http://www.habeat.eu/news.php?news=HabEat-final-symposium>

The screenshot shows the HabEat website with a header featuring a cartoon character, the 'HabEat' logo, and two photos of children eating. The main content area is titled '2014/03 - HabEat final symposium' and includes the following sections:

- HabEat final symposium**
"Improving infant and child eating habits, encouraging fruit and vegetable intake. Translating evidence into practical recommendations"
- 31st March & 1st April 2014**
Dijon, France
- WELCOME**
The symposium will report the final results of the HabEat project, which will help to understand better how eating habits and food preferences are formed during the early years of life. Practical implications of these results will be presented. How these implications could be translated into recommendations concerning feeding practices will be discussed with the participants.
- The aim of this symposium is also to exchange ideas and to cross views with results from other research works. Thus, the programme is open to presentations in the form of poster presentations.
- WHO SHOULD ATTEND**
Early childhood professionals, paediatricians, political decision-makers in charge of defining nutritional policies, baby food industries, researchers as well as representatives of parents associations will be welcomed.
- TOPICS**
 - Infant feeding & complementary feeding
 - Eating behaviour in toddlers and young children
- Click on the following links for more information:
 - [BOOKLET FOR PARENTS](#)
 - [FLYER](#)
 - [DETAILED AGENDA](#)
 - [POSTER CALL](#)
 - [VENUE](#)
 - [HOTELS](#)

On the right side of the page, there is a 'Contact' link, an 'Extranet' login section with a 'Login' button and a password field, and an 'Events' section with a link to the 'HabEat final symposium booklet for parents stakeholder leaflet'.

Annex 2: Attendance list

A - B

Last Name	First Name	Institut
Almli	Valérie	Nofima
Amarger	Valérie	INRA
Aurélié	Imbert	Protéines
Barbault	Christiane	Le Progrès
Bayer	Frédéric	INRA UMR CSGA
Bellin	Constance	Fond français pour l'alimentation et la santé
Bernal	Maria Jose	Hero Institute for Infant Nutrition
Biguzzi	Coralie	Eveil'O'Goût
Blundell	Pam	ULeeds
Boggio	Vincent	Université de Bourgogne
Bonhomme	Cécile	Lactalis Nutrition Santé
Bonhomme	Francis	ORIGINAL
Boyce-Fidgeon	Marie	Dietitian
Brannelly	Niamh	Danone
Brignot	Hélène	INRA UMR CSGA
Brondel	Laurent	University of Burgundy
Buijs	Petra	New Meanings BV
BASILEY	CLAIRE	ELLA'S KITCHEN
BINAPET	PHILIPPE	CHR HANSEN

C

Last Name	First Name	Institution
Castagna-Remy	Eloise	Bonduelle
Castetbon	Katia	Institut de veille sanitaire
Caton	Sam	University of Sheffield
Cecil	Jo	University of St Andrews
Chabanet	Claire	INRA UMR CSGA
Chambaron	Stéphanie	INRA UMR CSGA
Charles	François	IRCE
Charles	Mare-Aline	INSERM
Chauillac	Michel	Direction générale de la santé
Chenlara	Kelly	Les Chaises Hautes
Chisin	Quentin	INRA UMR CSGA
Cooke	Lucy	UCL
Costarelli	Vassiliki	HUA
Coulthard	Helen	De Montfort University
Cousin	Blandine	Yoplait

D - E

Last Name	First Name	Institut
Darcy-Vrillon	Béatrice	INRA
De Decker	Annelies	UGent
de Graaf	Cees	WUR
de Lauzon-Guillain	Blandine	INSERM
de Reynal	Béatrice	NutriMarketing
de Wild	Victoire	WUR
Delarue	Julien	AgroParisTech
D'Hont	Benjamin	ALCIMED
Dimitrieva	Svetlana	Scientific Research Institute of Baby Food
Divert	Camille	INRA UMR CSGA
Douvier	Evelyne	Conseil Général de Côte d'Or
Dowrich	Marisa	University of the West Indies
Emmett	Pauline	UNIBRIS
Etiévant	Patrick	INRA
BIRZNIECE	INGA	MINISTRY OF HEALTH, LATVIA

F, G, H

SurName	First name	Institut
Fasquel	Jean-Philippe	Wellence
Ferdenzl	Camille	CRNL Université Lyon 1
Fernandes-Machado	Sandra	Newcastle University
Fernandez	Laura	European Food Information Council
Feron	Gilles	INRA UMR CSGA
Feyen	Valérie	INRA
Floramonti	Jean	INRA
Fordham	Katie	Danone Baby Nutrition UK
Francis-Granderson	Isabella	University of the West Indies
Frelut	Marie-Laure	European Childhood Obesity Group
Gadaux	Marine	INRA
Godefroy	Valérie	Université de Nanterre Paris Ouest
Gostleux	Oren	European Parental Association
Gulchard	Elisabeth	INRA UMR CSGA
Hahn	Thierry	Ubersi
Hartok	Anna	Warsaw University of Life Sciences
Haycraft	Emma	Loughborough University
Hechenington	Marlon	Ulaeds
GUYONDET	Patrick	ABSCISS

I, J, K, L

last name	first name	Institution
Issanchou	Sylvie	INRA UMR CSGA
Jaczevska-Schultz	Joanna	National Food and Nutrition Institute
Jager	Gerry	WUR
Jones	Louise	UNIBRIS
Kafkas	Alex	University of Manchester
Kennedy	Aileen	Dublin City University
Kergoat	Sophie	Wrigley
Komninou	Sophia	University of Liverpool
Köster	E.P.	Utrecht University
Kremer	Stefanie	WUR-FBR
Labeye	Elodie	Centre de recherche Paul Bocuse
Lafraine	Jérémie	Institut Paul Bocuse
Lange	Christine	INRA UMR CSGA
Laval	Caroline	INRA UMR CSGA
Le Bris	Marline	NESTLE
Libert	Thérèse	AFDN
Lluch	Anne	Danone Research
Lopes	Carla	UPORTO
Lustrat	Elisabeth	VITAGORA

M

last name	first name	institution
Madrelle	Jérôme	INRA UMR CSGA
Maler	Andrés	Nestlé
Mallet	Dominique	AUCIE Wasquehal
Manios	Yannis	HUA
Marduel	Agnès	Blédina
Markouli	Donal	University of Liverpool
Marques Neves	Filipa	Unidade local de Saude de Metasinhos
Martin	Christophe	INRA UMR CSGA
Martin	Nathalie	Nestlé Research Center
Matencio	Esther	Hero Institute for Infant Nutrition
Matuszczyk	Malgorzata	Children's Memorial Health Institute
Mazany	Agnieszka	Nutricia Poland
McNally	Janet	University of Leeds
Meintani	Ioanna	Université de Bourgogne
Mestdagh	Renaud	Soredab
Michaelsen	Kim F.	University of Copenhagen
Mielle	Patrick	INRA
Moens	Ellen	Ghent University
Mojet	Jos	retired Wageningen University
Møller	Per	UCPH
Monnery-Patris	Sandrine	INRA UMR CSGA
Moreira	Pedro	U.PORTO
Morzel	Martine	INRA UMR CSGA
Moschonis	George	HUA
Mura	Manon	Danone Research
Murphy	Aisling	Dietitian

N, O, P

Last Name	First Name	Institut
Nehring	Ina	University of Munich
Neuhoff-Murawska	Joanna	Poradnia Dietetyczna Oregano
Neves	Fiana	Unidade Local de Saude de Matosinhos
Neyraud	Eric	INRA UMR CSGA
Nicklaus	Sophie	INRA UMR CSGA
Nogal	Mickael	Secteur français des aliments de l'enfance
Oliveira	Andreia	UPORTO
Olivier	Leanne	Danone Baby Nutrition UK
Olsen	Annemarie	UCPH
Padol	Julie	ORCHIDALI
Paladino	Romain	INRA UMR CSGA
Parnet	Patricia	INRA
Parniere Lellu	Nelly	Private
Pénicaud	Luc	CNRS
Perroux	Julia	Goudgout
Peteuil	Audrey	University of Burgundy
Potter	Christina	University of Bristol

R - S

Last Name	First Name	Institut
Rekora	Aleksandra	Medical University of Warsaw
Richonnet	Céline	Groupe Bel
Rigal	Natalie	Université Paris Daut
Rodrigues	Julie	INRA UMR CSGA
Rouby	Catherine	Centre de Recherche en Neurosciences de Lyon
Salariève	Benoit	Institut de veille sanitaire
Saul	Ira	Our Lady's Children's Hospital
Sautot	Caroline	IT
Scheel	Benoist	Université de Bourgogne
Schoofs	Liesbeth	Haro
Schoumacker	Rachel	INRA UMR CSGA
Schwartz	Camille	*
Septier	Chantal	INRA UMR CSGA
Shloim	Natalie	University of Leeds
Sicard	Mariette	Groupe Seb
Sienkiewicz	Dorota	European Public Health Alliance
Silva	Scaglioni	De Marchi Foundation
Simon-Plas	Françoise	INRA
Spillone	Joanna	Olefin
Sulmont-Rossé	Claire	INRA UMR CSGA
Simonin	Anne-Nathalie	U Bourgogne

T, V, W, Y, Z

Last Name	First Name	Institute
Taraszevska	Anna	National Food and Nutrition Institute
Teixer	Florence	ONIRIS
Tournier	Carole	INRA UMR CSGA
Vacca	Elisabetta	Danone
Valade	Olivier	Danone
van Stokkom	Vera	INholland
Vandeweghe	Laura	Ghent University
Verbeken	Sandra	Ghent University
Verschoor	Carol	Nutricia Research
Vervoort	Leentje	Ghent University
Viet Phu	Tu	Hanoi University of Science and Technology
Wacharczyk	Zofia	DANONE- NUTRICIA -OPOLE
Wagner	Sandra	INSERM
Wen	Hugo	Danone Nutricia Research
Wizomb	Gemma	Loughborough University
Wolnicka	Katarzyna	National Food and Nutrition Institute
Wróblewska	Ewa	Nutricia Polska
Yuan	Wen Lun	INRA UMR CSGA
Zandringa	Geke	Stoerm reelleert
Zeinstra	Gertrude	OLD-FBR

Wen

Annex 3: Symposium Flyer



HABEAT SYMPOSIUM

**MARCH 31ST & APRIL 1ST, 2014
DIJON, FRANCE**

Improving infant and child eating habits,
encouraging fruit and vegetable intake.

Translating evidence into practical recommendations





WHAT IS HABEAT?

HabEat brings together **11 European partners** from 6 European countries with a **multidisciplinary approach** to enable a key breakthrough in the understanding of **how food habits are formed** and can also be changed in infants and young children. The project aims at understanding how infants develop food habits and to propose strategies for changing these habits within **early childhood**.



Focus on Infant feeding & complementary feeding, and Eating behaviour in toddlers and young children

Early childhood professionals, paediatricians, political decision-makers in charge of defining nutritional policies, baby food industries, researchers as well as representatives of parent associations will be welcomed.

SHOULD I ATTEND THE SYMPOSIUM?

HAVE YOUR POSTER PROMOTED!

CALL FOR POSTERS

Abstracts are invited for **poster presentations** on the symposium topics. Take this great opportunity to **promote your work** on the early development of eating habits.

Please submit abstracts by February 28th, 2014 using the template. The Scientific Committee will select the abstracts. Authors will receive notification of accepted abstracts by March 3rd, 2014.



The symposium will report the final results of the HabEat project, which will help to understand better how eating habits and food preferences are formed during the early years of life. Practical implications of these results will be presented. How these implications could be translated into recommendations concerning feeding practices will be discussed with the participants.

The aim of this symposium is also to exchange ideas and to cross views with results from other research works. Thus, the programme is open to presentations in the form of posters.

The research leading to these results has received funding from the European Community's Seventh Framework Programme (FP7/2007-2013) under the grant agreement n.FP7-245012-HabEat

DATE March 31st & April 1st, 2014
VENUE Dijon Exhibition Centre, 21000 Dijon, FRANCE
REGISTRATION From December 2013 until March 7th 2014
CONTACT Caroline SAUTOT, +33 (0)2 40 67 51 09

ABSTRACT SUBMISSION Before February 28th, 2014
ANNOUNCEMENT OF ACCEPTED ABSTRACTS March 3rd 2014

REGISTRATION IS FREE!

ONLINE REGISTRATION IS MANDATORY

<http://www.habeat.eu/>
 Login: SYMPOSIUM
 Password: DIJON



AGENDA

DAY 1: Monday March 31st, 2014

13.00-14.00 REGISTRATION

SESSION 1 INFANT FEEDING & COMPLEMENTARY FEEDING

14.00-14.05 Welcome: Luc Penicaud - CNRS, France - & Sylvie Issanchou - INRA, France
 14.05-14.20 Introduction: Sylvie Issanchou - INRA, France
 14.20-15.10 How influential is early experience with food-related odours and flavours: a look at paradoxes: Benoist Schaal - CNRS, France
 15.10-15.35 Early feeding practices and later food habits: Blandine de Lauzon-Guillain - INSERM, France
 15.35-16.00 Early feeding practices and child's growth: Yannis Manios - Harokopio University, Greece
 16.00-17.00 Poster session 1 & Coffee break
 17.00-17.25 Introduction of vegetables in the diet: Lucy Cooke - University of London, UK
 17.25-18.30 Discussions with an introduction by Carla Lopes - University of Porto, Portugal

20.00-22.30 GALA DINER - FREE

DAY 2: Tuesday April 1st, 2014

SESSION 2 EATING BEHAVIOUR IN TODDLERS AND YOUNG CHILDREN

09.00-09.20 Learning to like vegetables: introducing the HabEat experiments: Marion Hetherington - University of Leeds, UK
 09.20-09.45 Strategies for learning to eat and like new vegetables: Victoire de Wild - Wageningen University, the Netherlands
 09.45-10.10 Interventions to increase vegetable intake in early childhood: Gertrude Zeinstra - Stichting DLO, the Netherlands
 10.10-10.35 Modelling the role of individual differences in the effectiveness of interventions to increase vegetable intake in childhood: Pam Blundell - University of Leeds, UK
 10.35-11.35 Poster session 2 & Coffee break
 11.35-12.00 Control of food intake and impact of parental practices: Sophie Nicklaus - INRA, France
 12.00-13.00 Discussions with an introduction by Pauline Emmett - University of Bristol, UK
 13.00-14.30 Lunch - FREE

SESSION 3 TRANSLATING SCIENCE INTO PRACTICE

14.30-15.20 Promising interventions and research areas in complementary feeding and healthy growth promotion: Kim Fleischer Michaelsen - University of Copenhagen, Denmark
 15.20-16.00 General discussion on recommendations and conclusion
 16.00 End of symposium

Annex 4: Posters list

Session 1 - Monday 31st March, 16:00-17:00

- P1** Oliveira A, Lauzon-Guillain B, Jones L, Emmett P, Moreira P, Ramos E, Charles MA, Lopes C.
Could birth weight predict feeding behaviours in early life? Cross-cultural comparisons within three European population-based cohorts.
- P2** Oliveira A, Jones L, Lauzon-Guillain B, Emmett P, Moreira P, Charles MA, Lopes C.
Early eating behaviours in relation to fruit and vegetable intake and a healthy diet variety score at 4-5 years of age - a prospective analysis in three European birth cohorts.
- P3** Yuan WL, Rigal N, Monnery-Patris S, Chabanet C, Charles MA, de Lauzon-Guillain B.
Early determinants of fruit and vegetables liking among children from the EDEN mother-child cohort.
- P4** Rekosz A, Matuszczyk M, Winnicka-Makulec E, Socha P, Rybak A.
Clinical characteristic of patients with feeding disorders.
- P5** Matuszczyk M, Rybak A, Wiernicka A, Winnicka-Makulec E, Zych K, Socha P.
Multidisciplinary care of children with feeding disorders - why dietitian is essential in the team?: a case report.
- P6** Feron G, Brignot H, Ducoroy P, Gaillard S, Jeannin A, Le Deaut AL, Lucchi G, Morzel M, Neyraud E, Nicklaus S, Nicod F, Schlich P, Truntzer C, Visalli M, Peretti N.
Understanding food behaviour in child through salivary composition: a prospective study on children expressing oral disorders.
- P7** Le Révérend BJD, Edelson LR, Alder M, Loret C.
Physiological aspects of the development of mastication in early childhood.
- P8** Tournier C, Nicklaus S, Salles C.
Studying food oral processing in young infants. Methods development.
- P9** Pean J, Alles M, Warren JM, Delaere F, Lluch A.
Simulation of the theoretical nutritional impact of replacing cows' milk with growing-up milk in the diet of UK children.
- P10** Amarger V, Migraïne A, Moyon T, Vaiman D, Darmaun D, Flamant C, Rozé JC, Parnet P.
A common genetic variant in the Insulin Receptor gene is associated with eating difficulties at 2 years of age in a cohort of preterm infants.
- P11** De Decker A, Sioen I, Verbeke S, Michels N, De Henauw S.
Reward sensitivity and consumption frequency of fatty and sugar rich foods.
- P12** Godefroy V, Rigal N.
Children's appetitive traits associated with BMI: validation of a new questionnaire and a new model, inspired from temperament literature.
- P13** Rannou C, Texier F, Courcoux P, Cariou V, Nicklaus S, Prost C.
A comparison of salt perception and acceptance of salt reduced food among children and adults.
- P14** Lange C, Schoumacker R, Yuan WL, Chabanet C, Nicklaus S.
Development of a questionnaire to measure attraction to sweet, salty and fatty foods in children.
- P15** Ferdenzi C, Poncet J, Rouby C, Bensafi M.
Olfactomotor correlates of olfactory perception in children.
- P16** Morzel M, Chabanet C, Schwartz C, Nicklaus S.
Salivary protein profiles are linked to bitter taste acceptance in infants.
- P17** Pouyfaucou M, Gaignaire A, Biguzzi C, Lange C, Schlich P.
EveilSens: an early-learning sensory education in 5 to 6 years-old children.



Session 2 - Tuesday 1st April, 10:35-11:35

- P18** Olsen A, Møller P, Ritz C, Bär R, Hausner H.
Optimizing mere exposure: How are vegetables most efficiently served to children?
- P19** Hausner H, Olsen A, Møller P.
Mere exposure and flavour-flavour learning increase 2-3 year-old children's acceptance of a novel vegetable
- P20** Nehring I, Kostka T, von Kries R, Rehfuss EA.
Early infant flavor experiences and taste preferences: a systematic review using harvest plots.
- P21** Hetherington M, Schwartz C, Madrelle J, Croden F, Vereijken C, Woenen H.
Gradual introduction of vegetables in milk and rice during weaning: early, varied and repeated exposure enhances liking and intake.
- P22** Divert C, Remy E, Rousselot J, Brondel L, Issanchou S, Nicklaus S.
Effect of energy density on liking and on caloric adjustment conditioning after sweet beverage exposure in children aged 8-11 y.
- P23** Moens E, Verbeke S, Vandeweghe L, Vervoort L, Goossens L, Braet C.
How can classical conditioning learning procedures support the taste development in toddlers (IREWARD): rationale, design and methods.
- P24** Lafrère J, Labey E, Giboreau A, Picard D.
Encouraging fruit and vegetable intake through social facilitation: From research to practice.
- P25** Vandeweghe L, Verbeke S, Moens E, Vervoort L, Braet C.
Strategies to improve the willingness to taste: the moderating role of reward sensitivity.
- P26** Vervoort L, Vandeweghe L, Moens E, Verbeke S, Braet C.
Ineffective strategies and cues to promote healthy eating in toddlers.
- P27** Edelson LR, Kuenzel J, Martin N.
Parent techniques for encouraging toddler consumption of fruits and vegetables.
- P28** Francis-Granderson I, Dowrich M, Copeland C.
Improving fruit and vegetable intake among primary school aged children in North East Trinidad.
- P29** Dimitrieva S, Simonenko S, Mosov A, Portnov N.
Observations of the Moscow parents' society on kindergarten menu design.
- P30** Monnery-Patris S, Peteuil A, Chabanet C, Rigal N, Issanchou S.
Parental practices associated with child's self-regulation abilities: Validation of a French questionnaire.
- P31** Monnery-Patris S, Thiebaut D, Lopes C, Oliveira A, Manios Y, Mavrogianni C, Moschonis G, Chabanet C, Issanchou S.
New questionnaire to assess parental feeding practices in large scale studies: cross validation in three countries (France, Portugal and Greece).
- P32** Wolnicka K, Jazewska-Schuetz J, Taraszkowska A.
Analysis of factors affecting the consumption of fruits and vegetables by children.
- P33** Shloim N, Rudolf M, Feltbower RG, Mohebbati L, Hetherington M.
Breast is best - positive mealtime interactions in breastfeeding mothers from Israel and the UK.
- P34** Brown A, Lee M.
Introduction of complementary foods and later weight and eating behavior: The role of a baby-led weaning approach.
- P35** Ahern SM, Caton SJ, Blundell P, Hetherington MM.
Comparing flavour-flavour learning with repeated exposure as a strategy for promoting vegetable intake in pre-school children.
- P36** Harton A, Myszkowska-Rydz J.
Nutritional education of preschool children.
- P37** Coulthard H, Sealy A.
Sensory fruit & vegetable play increases acceptance in preschool children.



Annex 5: Symposium roll-up posters





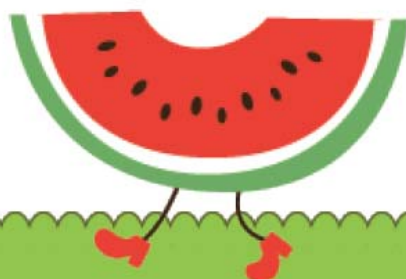
Annex 6: Book of abstracts



Annex 7: Book of parents



Habeat
VEGETABLES AND FRUIT
Help your child to like them



A guide for parents of young children

Annex 8: Stakeholder leaflet

RECOMMENDATIONS FOR FUTURE RESEARCH

Researchers from HabEat identified some gaps that need to be answered by future research. Here is a summary of these recommendations:

- To understand if breastfeeding duration is related to higher diet quality in early childhood (as shown in our European cohorts) in populations from low and middle-income countries, where breastfeeding duration is longer in disadvantaged rather than in advantaged families.
- To confirm that the association of breastfeeding with higher diet quality persists throughout childhood and to clarify the effect of maternal diet during breastfeeding.
- To explore the effect on a healthier diet in childhood of other aspects of complementary feeding than timing including food variety during the complementary feeding period, and use of home-prepared vs. ready-prepared baby foods.
- To study the determinants of child eating difficulties, how parents adapt their feeding practices in response to these difficulties, and how these adaptations shape the future eating habits of the child.
- To further understand why a specific group of children (identified in HabEat experiments) do not respond to repeated exposure by increasing their intake of a food.
- To replicate in larger population samples with different cultural eating habits and socio-economic status the finding that repeated exposure to a variety of single vegetables at the start of complementary feeding results in better acceptance of an unfamiliar vegetable. In addition the longer-term impact of such interventions remains to be established.
- To explore the optimal serving size and the optimal frequency of the repeated exposure technique for increasing intake of a novel vegetable and of a relatively familiar vegetable.
- To further explore the effect of positive restriction of healthy foods (vegetables) on children's intake, which means that a role model eats the vegetable enthusiastically whereas the children cannot or are not allowed to eat it at that moment.
- To investigate whether role modelling strategies in a home situation are effective for increasing intake of relatively familiar vegetables (rather than in a school setting as was tested in HabEat).
- To test whether children eat fewer vegetables at home in the evening if they receive additional vegetables at school.
- To investigate in larger samples of different age groups (including toddlers) whether offering a choice of vegetables may be an effective strategy to increase consumption of relatively familiar vegetables.
- To explore ways of increasing vegetable intake in children who are non-vegetable likers/low-vegetable likers.
- To investigate whether children helping with vegetable preparation repeatedly (rather than just once as tested in HabEat), or in the home-setting, or in children over 6 years has a beneficial effect on vegetable intake.
- To perform research on other health-promoting foods often rejected by children, such as fish and whole-grain cereals.



Evidence-based recommendations for the formation of healthy eating habits in children from infancy to 6 years old.

HabEat aimed to identify strategies to promote healthy eating habits in infants and young children. We investigated strategies to facilitate preferences for healthy foods, particularly vegetables, and examined the impact of individual differences in child eating behaviour and parental feeding practices.



References from HabEat already published:

1. Allen SM, Carter SJ, Banks L, Smeeth H, Olliver A, Nicklaus S, Maitre P, Hetherington MM (2013). Eating a Rainbow: Introducing vegetables in the first years of life in 3 European countries. *Appetite*, 71, 48-56. doi: 10.1016/j.appet.2013.07.005
2. Benito A, Charles MA, Hankard R, Fotherall A, Boies M, Sautel-Cabizelles MJ, Trude B & de Lauzon-Guillain B (2013). Infant feeding patterns over the first year of life: influence of family characteristics. *Int J Clin Nutr*, 92, 431-437. doi: 10.1038/ajcn.2012.200
3. Carter SJ, Allen SM, Remy E, Nicklaus S, Blundell P & Hetherington MM (2013). Repeated exposure increases intake of a novel vegetable in UK pre-school children compared to flavour-flavour and flavour-nutrient learning. *Br J Nutr*, 109, 2089-2097. doi: 10.1017/S0007114512004126
4. de Lauzon-Guillain B, Jones L, Olliver A, Michon G, Escarot A, Lopez C, Maitre P, Manson V, Papadopoulos NG, Emmert P & Charles MA (2013). The influence of early feeding practices on fruit and vegetable intake among preschool children in 4 European birth cohorts. *Am J Clin Nutr*, 98, 804-812. doi: 10.3945/ajcn.112.051026
5. de Lauzon-Guillain B, Olliver A, Charles MA, Grammatikaki E, Jones L, Rigal N, Lopez C, Maitre P, Emmert P & Mansoury-Patris S (2012). A review of methods to assess parental feeding practices and preschool children's eating behavior: the need for further development of tools. *J Acad Nutr Diet*, 112, 1578-1602. doi: 10.1016/j.jand.2012.08.305
6. de Wit M, de Graaf C & Jansen M (2013). Effectiveness of flavour-nutrient learning and mere exposure as mechanisms to increase toddler's intake and preference for green vegetables. *Appetite*, 64, 89-96. doi: 10.1016/j.appet.2013.01.006
7. de Wit M, de Graaf C & Jansen M (2014). Efficacy of repeated exposure and flavour-flavour learning to increase preschooler's vegetable intake and acceptance. *Pediatr Obes*, in press.
8. Hetherington MM, Olliver A & Moller F (2012). Mere exposure and flavour-flavour learning increase 2-3 year-old children's acceptance of a novel vegetable. *Appetite*, 55, 1152-1155. doi: 10.1016/j.appet.2012.03.009
9. Nicklaus S & Remy E (2013). Early origins of overeating: Tracking between early food habits and later eating patterns. *Current Obesity Reports*, 2, 179-184. doi: 10.1007/s13679-013-0055-9
10. Paquetto A, Serezo M, Lopez C, Maitre P, Cooke L & Oliveira A (2014). Could the Food Neophobia Scale be adapted to pregnant women? A confirmatory factor analysis in a Portuguese sample. *Appetite*, 75, 110-116. doi: 10.1016/j.appet.2013.12.023
11. Remy E, Lissachou S, Chabanet C & Nicklaus S (2013). Repeated exposure of infants at complementary feeding to a vegetable puree increases acceptance as effectively as flavour-flavour learning and more effectively than flavour-nutrient learning. *J Nutr*, 143, 1194-1200. doi: 10.3945/jn.113.175646

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BREASTFEEDING AND COMPLEMENTARY FEEDING

Breast milk is the best food for infants. Among its many advantages, HabEat found evidence that it may facilitate the consumption of vegetables and fruit and a greater variety of healthy foods in later childhood. This may be the result of exposure to flavours from the mother's diet changing the taste of the breast milk.

Recommendation

Continued efforts should be made to encourage breastfeeding.

The complementary feeding period is a 'window of opportunity' when an infant is particularly receptive to a variety of foods with different flavours and textures. It is important that infants are introduced to a variety of different vegetables in the complementary feeding period as HabEat found some evidence that this increases later acceptance of novel foods. Familiarity with many different vegetables is likely to lead to the consumption of a greater variety of vegetables and fruit, as the child grows.

HabEat has shown that introducing a variety of single plain vegetables to infants can increase acceptance of a novel vegetable.

HabEat has also shown that repeating the exposure to the same vegetable can increase acceptance of that vegetable. If it is refused at first it should be offered again after a few days. The number of tastings needed will depend on the age and eating temperament of the individual child and on the particular vegetable. As many as 8 exposures may be necessary and can be carried out in both home and childcare settings.

HabEat found that infants accept novel vegetables more readily than older children (aged 2 to 6 years).

HabEat has shown that children (aged 4 to 36 months) who are less enthusiastic eaters needed more exposures to accept a novel vegetable. These children consumed less of the vegetable at the beginning but their intake increased with exposure.

Recommendation

Introduce plain vegetables as first foods in the complementary feeding period and use repeated exposure to a variety of vegetables to increase acceptance of vegetables.

FEEDING YOUNG CHILDREN (AGED 2 TO 6 YEARS)

Children are more likely to become neophobic and picky (refuse novel but also familiar foods) between the ages of 2 and 6 years and at this stage it is more difficult to achieve acceptance of a novel vegetable. HabEat has shown that repeated exposure to a plain novel vegetable increases intake in children of this age.

Offering several different serving styles (sticks, grated, squares etc.) of vegetables may be effective in increasing intake, as this influenced liking and intake among young children in HabEat.

HabEat found that offering children more than one vegetable to choose may increase their intake of vegetables. Other HabEat studies have shown that offering the same (relatively familiar) vegetable twice per week may lead to boredom and diminish intake of that vegetable.

HabEat did not find evidence that, for children aged 4 to 6 years, helping to prepare vegetables on one occasion in a restaurant setting was effective in increasing their intake of a relatively familiar vegetable. Neither the child's teacher nor a cartoon character acting as a role model was effective in increasing intake of a relatively familiar vegetable in a class-room setting.

Recommendation

Use repeated exposure to a novel vegetable to help a child learn to enjoy the taste of that vegetable. When possible offer children a choice of two or more vegetables.

Children described by their parents as 'difficult eaters' were found by HabEat to eat less vegetables and fruit and a less varied diet at 4-5 years of age than children who were not described as difficult.

Recommendation

Parents should persist in offering children who are 'difficult eaters' a variety of food and textures to help them learn to like a range of foods.



FOOD INTAKE REGULATION AND PARENTAL FEEDING PRACTICES

HabEat found that parents who used Food as a reward were more likely to have children (aged 3 to 6 years) who ate in the absence of hunger than parents who did not use this feeding practice.

Recommendation

Food should be offered to a child in response to their feelings of hunger, and not used as reward for a good behaviour or for any other reason.



HabEat found that when children (aged 3 to 6 years) ate a preloved of energy-dense food less than one hour before a meal, they ate less during the meal. However, at the meal, children adjusted their food intake only partially for the energy ingested from the preloved. Therefore their overall average energy intake was higher with the preloved than when only the meal was eaten.

HabEat found that when energy-dense foods were available freely after a meal, most children (aged 3 to 6 years) ate in the absence of hunger and consumed extra energy.

Recommendation

Avoid offering energy-dense snacks before or after meals. If children are hungry before a meal, vegetables could be offered as a snack/appetizer.