

**ECOG Satellite RTD Workshop on New Technologies and Innovations
to Tackle Obesity
Future research needs / topics:**

Session 2: Impact of Childhood nutrition on obesity risk

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The over-all objectives of the Work Session

- Provide insight into the current EU Projects involved in exploring determinants for childhood obesity, strategies for prevention and food habit formation and breaking in early life.
- To explore the potential long-term effects in programming obesity by chemical toxics.
- To explore opportunities to employ and apply new technologies and innovation to tackle obesity.
- Define the necessary and appropriate human and animal investigations
- Identify research gaps and prioritise actions needed to fill these gaps
- To identify new ideas for the close future to be funded.

Relevance of the session 2 in relation to the workshop topic

- Obesity prevalence and distribution among Europe and related factors
- Exploring difficulties and potential actors for interventions to modify existing risk factors.
- The projects involved in this session addressed a very wide overview of the situation in Europe related to obesity, nutrition details, and physical activity practices, as well as food behaviour.
- Strong efforts are being made in order to harmonise the procedures and available data.
- Cultural aspects as determining factors for differences between Northern and Southern EU countries.

1) Further understanding for childhood obesity and strategies for prevention has been shown. A good example has been demonstrated with the preliminary results emerged from the IDEFICS EU Project. The efficacy of this project in prevention of obesity during childhood, and the impact of the program to change lifestyle among community, schools and family, seems to be a major goal to be extended to other countries and cities in Europe. The project reveal that there is a gradient of prevalence of obesity between Northern and Southern countries in Europe, with exception of UK which joined to Italy, Cyprus and Spain having the highest prevalence, arriving to levels higher than 60% of overweight and obese children (2-9 years). There are also statistical differences between girls and boys. Family type seems to be an important confounder, as well as some genes such FTO polymorphisms. New index such moveability more adapted to children activities offer the opportunity to analyze other potential gaps to be solved which will surely help to control the obesity epidemic.

2) Food habit formation and breaking in early childhood (HabEat):

Critical periods on growth development has been identified : 6 months, 3 years and “silent period between 6 mo and 3 years”. There is a general need to identify other critical periods and factors of child eating behaviors and parental feeding practices during the first 3 years of life. The new project HabEat will address:

- Recommendations in parental practices for promoting healthier food habits in infant and children,
- Guidelines for policy makers and stakeholders and on most effective advice to communicate to healthy food habits for infants and children and the best way to change poor habits.

Perinatal determinants of obesity, the preference for sweet/fatty foods and experimental work on animal models and cell cultures are suggested for future work.

3) Influence of early exposure to chemicals on obesity later in life (OBELIX): It has been demonstrated obesogenic effect of environmental chemicals. Endocrine disrupters are well related to adverse health effects, both in an intact organism and in its progeny, changing endocrine function. Dioxines, organochlorine pesticides, brominated flame retardants, phthalates, and perfluorinated compounds are being explored as potential factors influencing obesity development in early life. The Toxicant Equivalent level is established only for dioxins, but not for the rest of compounds. The combined effect of these compounds is under question and it has been shown the need for long-term studies. Moreover, the epigenetic effect will be studied in animal models.

4) The role of physical activity and well-being was discussed also inside of IDEFICS project.

Gap-analysis

- Interfatorial problem which need to be assessed individually
- Long - term effects are being explored with the old cohorts
- Difficulties to develop the human studies to observe the long-term effects, but these kind of studies are really needed at a cross EU level.
- More epidemiological studies are needed
- Existing studies and the coming studies should be joined to be analyzed on a meta level and these results will be of added value among the European Research Community
- Very expensive studies to be applied to humans even partially, but the economic return will be much higher
- Recommendations are needed as soon as possible in order to diminish the impact of obesity among European children and adolescents.

Specific priorities

- To continue exploring the Fetal Programming as a major long-term and heredity impact factor for obesity on the population
- To explore the environment effects and what is really changing (spaces for physical activity,...)
- To study the effect of behavior change from the perinatal period, including role of mother& father regarding habits and taste.
- Effects of diet and nutrient in pre-pregnancy, physiology of the placenta and the regulation of the metabolic pathways programming related.
- To analyze the long term effects of chemical toxicants

- Impact assessment of the influence of the mass media communication about bio-environmental factors
- Nutrition and physical activity large network are needed
- Minimizing the gap in social inequalities as major goal for the future years in Europe
- Evaluation of policies. Urgently needs for new recommendations and policies
- Determinants and process of decision making by families
- Europe and USA collaborations should be promoted.
- What are the causes of the change in prevalence of obesity?
- All life-long studies related to obesity
- Standardisation of methodology is needed
- New ways to measure intake, therefore particular biomarkers (individual compounds or groups of compounds) could be used as quantitative or qualitative indicators of consumption of particular classes of nutrients (micro and macro) or foods or of adoption of particular dietary patterns.