



**European Association for the Study of Obesity (EASO) Young
Investigators United Report of the European Congress on
Obesity (ECO) 2012**

**This brief report gives an overview of the ECO2012
Scientific Programme**

Supported by Weight Watchers®



Mission

EASO promotes obesity as a health, research, and societal priority. It facilitates and engages in actions that reduce the burden of overweight and obesity on European citizens.

The objects of EASO are:

- To maximise the public benefit of European scientific research and clinical practice in the field of obesity and its related disorders
- To promote a multidisciplinary approach to tackling overweight and obesity by engaging all relevant stakeholders within the European obesity community, and by facilitating contact between those stakeholders
- To understand and communicate the complexity of how to achieve and maintain a healthy bodyweight as well as the implications of obesity as a gateway disease
- To facilitate and engage in actions that prevent and combat the epidemic of overweight and obesity in Europe

The objectives of EASO are to:

- Promote Obesity as a Health Priority in Europe
- Develop, Promote and Deliver Obesity Education in Europe
- Promote, Inform and Engage in European Obesity Research
- Disseminate Key European Messages/Developments
- Communicate with relevant Internal and External Stakeholders

Established in 1986, EASO is a European scientific membership association, with networks in over 30 countries. It is in formal relations with the WHO Regional Office for Europe and is an active member of EU Commission initiatives including the EU Platform on Diet, Physical Activity and Health and the Joint Programming Initiative on Healthy Diet Healthy Lives. EASO facilitates and engages in actions that prevent and combat the epidemic of obesity. It contributes to high level European and National scientific consultations, hosts the annual European Congress on Obesity (ECO), has dynamic and active topic specific Task Forces and Working Groups, and coordinates obesity education across Europe.



The European Association for the Study of Obesity (EASO) Young Investigators United (YIU) was established in 2005 and now acts as an informal community for young investigators to collaborate on projects and to share experiences and expertise. The YIU initiative combines an online community with an annual event at the ECO, where young investigators have an opportunity to meet, interact and share ideas with colleagues from around the world.

Young Investigators United aims to:

- Facilitate the networking of young European scientists
- Provide an arena for the exchange of ideas and best practices between experts and experts-to-come
- Improve opportunities for future collaborations or consultations when heading for the common goal: preventing and treating obesity.

YIU Board

Dr. Gijs Goossens (Netherlands)

Dr. Teodora Handjieva-Darlenska (Bulgaria)

Dr. Michal Holecki (Poland)

Dr. Amaia Rodriguez (Spain)

For more information for how to get involved in YIU, please see the www.easo.org/yiu.

Find us on Facebook 

We would also like to take this opportunity to announce that EASO's Young Investigators United network now has a group page on Facebook. All ECO2012 delegates are welcome to join our online community.



The objectives of the ECO are:

- To provide an annual forum for the dissemination of information about research advances in the field of obesity
- To identify, debate and promote innovative preventive and treatment strategies to reduce the prevalence of obesity and its associated burden of diseases
- To provide networking opportunities for experts in the field of obesity research and management

The ECO2012 was held in Lyon (France) from 9th to 12th May 2012 and attracted 2,000 international delegates. The scientific programme featured 7 plenary lectures, 14 review sessions (55 presentations), 13 oral sessions (72 presentations), 6 Association Sessions, 4 Special Sessions, 3 EASO Task Force Workshops and 8 Industry Supported Sessions. The following report, which is a snapshot of the scientific programme, was commissioned by the EASO Young Investigators United Board and has been brought to you in partnership with Weight Watchers® International.

Wednesday 9 May 2012

Opening Plenary Lecture: Future trends in clinical research and management

This plenary lecture was chaired by EASO's President, Prof. J-M. Oppert (Institute of Cardio-metabolism and Nutrition, ICAN, Paris-6 University, Hôpital de la Pitié Salpêtrière-Paris, NUTRITION, Paris, France), and congress chair Prof. M. Laville (Centre de Recherche en Nutrition Humaine Rhone-Alpes, Centre Hospitalier Lyon-Sud, France).

Prof. A. Basdevant (Institute of Cardio-metabolism and Nutrition, ICAN, Paris-6 University, Hôpital de la Pitié Salpêtrière-Paris, NUTRITION, Paris, France) provided an excellent opening lecture, in which he explained that an integrated research approach ranging from basic to social sciences and from clinical research to care organisation innovation is required to combat obesity. He mentioned that integrated strategies are required to improve prevention and promote obesity treatment based upon identification of preclinical events and predictors of treatment responses and innovative diagnostic tools and therapies. Furthermore, it is key to treat each person as unique individual rather than a statistical average (shift from "one treatment fits all" to an individually tailored approach). Two aspects are key to achieve this, namely 1) the generation of accurate clinical data (from large-scale analyses to hypotheses generation to experimental research to validate hypotheses) and 2) sharing of data. The generation of data requires comprehensive patient phenotyping.

Thus, obesity can be misclassified based on body mass index. Instead, it would be better to assess fat mass and even adipose tissue morphology. In line, measurements beyond waist circumference are preferred, including examination of ectopic fat storage. Furthermore, observing changes (dynamic phenotype) is superior to observing a static phenotype, and it is important to realize that the same phenotypes may have a different underlying pathophysiology. Prof. Basdevant further explained that improvement should be made in data quality (set methodological standards) and data storage (standardize secure accessible repositories), and that a data sharing policy should be developed, taken into account ethical issues. The resulting clinical goal is a treatment adapted to the stage of disease and/or individuals' characteristics (e.g. genetics, lifestyle).

Opening Ceremony: EASO Young Investigators Award

Dr. Hans Hauner from Germany- Chair of the EASO Awards Committee -introduced this year's Young Investigator Awards in Basic Science, Clinical Research and Public Health for outstanding achievements.

The EASO Young Investigator Award in Basic Science went to Dr. Joris Hoeks (Netherlands). Dr. Hoeks obtained his PhD at the Department of Human Biology in Maastricht University and he is currently holding a position as Assistant Professor of Human Biology. He gave an interesting presentation of his research entitled "Skeletal muscle mitochondrial metabolism and lipotoxicity in insulin resistance". The major conclusions of the study of Dr. Hoeks are that long- and medium-chain fatty acids induce insulin resistance in humans. He also found that prolonged fasting, characterized by an increase in plasma fatty acids and intramyocellular triglycerides in type 1 and type 2 fibers, is associated with mitochondrial dysfunction in skeletal muscle.

The EASO Young Investigator Award in Clinical Research was obtained by Dr. Victoria Catalán (Spain). Dr. Catalán completed her PhD in 2005 and joined as Research Collaborator in the Metabolic Research Laboratory headed by Prof. Gema Frühbeck. She is currently holding a position as Assistant Professor at the Department of Endocrinology & Metabolism of the Clínica Universidad de Navarra. Dr. Catalán gave fascinating presentation entitled "Adipokine dysregulation and adipose tissue inflammation in human obesity". She explained the impact of obesity and obesity-associated type 2 diabetes in the expression of novel adipokines YKL-40, calprotectin, visfatin, chemerin and lipocalin-2 in adipose tissue. Most of these novel adipokines are upregulated in obesity and create an inflammatory state that contributes to adipocyte dysregulation in obese patients.

The EASO Young Investigator Award in Public Health was obtained by Claire Llewellyn (United Kingdom). Dr. Llewellyn obtained her PhD in 2010 at the University College London and she is currently holding a position as Research Fellow at King's College London since 2011. Dr. Llewellyn presented a fascinating communication entitled "Inherited behavioural susceptibility to obesity". During her PhD training, she developed the Baby Eating questionnaire that analyzes the appetite size, enjoyment of food, slowness of eating as well as satiety and food responsiveness. Dr. Llewellyn found in the cohort Gemini-Health and Development in Twins (n=4,804) that inherited variation in appetite confers more susceptibility to "obesogenic" environments.

THURSDAY 10 May 2012

Plenary Lecture: Epidemiological evidence on the long term harms and benefits of bariatric surgery

This plenary lecture was chaired by Dr. Pattou (Thérapie Cellulaire du Diabète, INSERM/Université de Lille, France) and Prof. B. Laferrère (New York Obesity Nutrition Research Center, Division of Endocrinology and Diabetes, Department of Medicine, St Luke's Roosevelt Hospital Center, Columbia University College of Physicians and Surgeons, New York, USA).

Prof. E. Näslund (Karolinska Institute, Department of Clinical Sciences, Danderyd Hospital, Stockholm, Sweden) gave an excellent presentation on both the harms and long-term benefits of bariatric surgery. Considering the increasing number of obese subjects, the number of subjects undergoing bariatric surgery increases on a yearly bases. This is reflected by a ~2-fold increase of bariatric surgeries worldwide from 2003 to 2005 (150 000 and 300 000, respectively). Prof. E. Näslund mentioned that it is unlikely that there will be any large randomized clinical trials comparing bariatric surgery to conventional treatment. Therefore, he explained that large population based studies with a non-treated control group would be the 'second best' approach. Next, Prof. E. Näslund discussed several population-based studies and its strengths and weaknesses. Based on the results available, the national guidelines for bariatric surgery in Sweden have recently been amended to BMI>35 kg/m² without co-morbidity.

Associate session: IFSO-EC - Bariatric Surgery

This session of the International Federation for the Surgery of Obesity and Metabolic Disorders European Chapter (IFSO-EC) was chaired by Dr. Luca Busetto, Member of the National Board of the Italian Obesity Society (SIO) and the Italian Society for Bariatric and Metabolic Surgery (SICOb), and Dr. Martin Fried, Board of Trustee Chair of the IFSO.

Dr. John Melissas, IFSO-EC President during 2006-2007, explained that, after the IFSO Council Meeting in Porto 2007, the IFSO published the guidelines and requirements for institutions and surgeons to ensure safe and effective management of bariatric patients (*Obes Surg* 2008; 18: 495-500). The process of accrediting surgeons and institutions as Centre of Excellence (COE) is initiated by the application of both through the website of The European Accreditation Council for Bariatric Surgery (EAC-BS) (www.EAC-BS.com). Institutions accepted as provisionally status IFSO-EC COE will, then, begin prospectively entering all operated bariatric patient's data in the International Bariatric Registry (IBAR™). The fulfilment of IFSO requirements for COE will ensure a reduction of morbidity, mortality and re-admission rates of morbid obese patients after bariatric surgery.

Dr. Martin Fried (in substitution of Dr. Luc Lemmens, actual IFSO EC President) highlighted the preoperative evaluation of the morbid obese patient requires an interdisciplinary obesity management with an appropriate staff and centre. The follow up of patients after bariatric surgery is important to prevent side-effects and complications (i.e. vitamin and mineral deficiency). Bariatric patients require an annual check-up with determinations of fasting glucose, HbA1c (for patients with type 1 or 2 diabetes), vitamin B12 and 25-OH.vitamin D3 as well as the evaluation of hepatic and renal function. Since the biliopancreatic diversion (BPD) and BPD with double switch have higher operative risks and some important late complications (even if the percentage is

low), these bariatric patients require a more exhaustive follow-up. Dr. Fried concluded that COE require a trained staff to an appropriate and accurate management of candidates to bariatric surgery, patients undergoing bariatric surgery and patients in the post-operative follow up (3 visits/year).

Dr. Maurizio de Luca (Department of Surgery, Regional Hospital of Vicenza, Italy) explained the inclusion criteria for bariatric surgery in adults (age 18-60, body mass index (BMI) ≥ 40 kg/m² or BMI ≥ 35 kg/m² + comorbidities) and in adolescents (BMI ≥ 40 kg/m², previous attempt of weight loss during 6 months with diet, exercise or drugs, showing skeletal maturity by X-ray and/or presenting genetic syndromes, such as Prader-Willi). Dr. de Luca pointed that elderly adults (≥ 60 years) show higher mortality after surgery and although bariatric surgery improves their quality of life, lifespan is not increased. In this sense, bariatric surgery is strongly discouraged for patients ≥ 70 years. Bariatric surgery improves several baseline comorbidities, such as type 2 diabetes, hypertension, dyslipidemia, obstructive sleep apnea and cardiovascular events. That being stated several COE have published studies of bariatric surgery with cohorts of obese patients with lower BMI (30-35 kg/m²) with a comorbidity. The majority of low-BMI patients experienced resolution of laboratory and clinical manifestations of their comorbidities.

Dr. Karin Dolezalova (OB Klinika, Centre for Treatment of Obesity and Metabolic Disorders, Czech Republic) gave an interesting presentation about laparoscopic greater curvature plication (LGCP), a novel bariatric restrictive procedure similar to vertical sleeve gastrectomy that does not require gastrointestinal resection, intestinal bypass or use of implantable device. Dr. Dolezalova presented the results of a cohort of patients undergoing LGCP and their follow-up 6 and 9 months after surgery. At 6 months, a significant weight loss was achieved and $\approx 97\%$ of morbid obese patients with type 2 diabetes experienced an improvement/resolution of their insulin resistance. There was no mortality and the procedure has very low rate of complication with major side-effects of LGCP being post-operative nausea. Dr. Karin Dolezalova concluded that LGCP is an effective procedure for weight loss as well as for the improvement of type 2 diabetes in obese patients.

Dr. Jan-Willem Greeve (Department of Surgery, Atrium Medisch Centrum Parkstad, Heerlen, The Netherlands) explained that growing evidence support that restrictive techniques Roux-en-Y gastric bypass or biliopancreatic diversion are associated with an improvement of type 2 diabetes. Dr. Greeve brilliantly explained several novel restrictive techniques of bariatric surgery performed in experimental animal models, such as the exclusion of the duodenum and/or proximal intestine by surgically disconnection the duodenum from the stomach or by placing a sleeve in the proximal gut. There are several clinical studies using novel devices with promising short-term effects on the improvement of type 2 diabetes, such as the Valentex sleeve or the duodenal jejunal bypass liner, but long-term results are still lacking.

Industry Supported Satellite Sessions: Weight Watchers® . Debating the Obesity Paradox

This satellite session supported Weight Watchers® was chaired by Dr. Jean Michel Borys, Director of the EPODE European network (Paris, France). In this session the impact of obesity in public health systems of several countries as well as the need to find effective, evidence-based solutions to manage overweight and obesity were discussed.

Dr. Jean Michel Borys opened this session highlighting the increase in the prevalence of obesity, specially of child obesity, during the last 20 years. The aim of EPODE european network is to raise political, institutional and scientific awareness in local communities to prevent childhood obesity. The EPODE approach is based on 5 pillars: i) political awareness, willingness and involvement; ii) scientific evidence and evaluation; iii) social marketing approaches; iv) legal and ethical framework of public/private partnerships; v) management of overweight and obesity. Using the EPODE methodology in several towns of France and Belgium, a decrease in the prevalence of overweight and obesity was observed.

Aviva Freudmann (Research Director of Continental Europe, Middle East and Africa (CEMEA) Economic Intelligence Unit, Frankfurt, Germany) gave an interesting presentation regarding the future healthcare in Europe. She explained that the increase in life expectancy as well as the increase in chronic diseases (responsible for 86% of deaths) have dramatically increase the health costs and policies need to change in order to ensure the sustainability of the health financial system. These policy reforms include legal reforms (i.e. reduce the young food advertisements), immunization campaigns (public health information), tax- or insurance-based incentives to promote healthy living or innovation of pharmaceutical and medical device companies in the areas of vaccines, antibiotics or antivirals, among others.

Finally, a preventional approach based on four primary prevention elements, such as healthy diet, physical activity, avoid alcohol and tobacco use, could prevent 80% of incidence of cardiovascular diseases, type 2 diabetes and cancer, highlighting the importance of personal responsibility in the future of healthcare.

Gillian Merron, former Minister of State for Public Health (United Kingdom), provided an excellent overview of how the growing obesity epidemics is increasing the financial demands for health systems. She stressed that we need to tackle obesity from economical, social and health grounds. Obesity not only is associated with the development of co-morbidities such as type 2 diabetes, cancer or depression, but also affects the well-being of the family. Weight loss programmes have been proven to be effective, but we need true partnerships to manage obesity problem. Weight Watchers® is an effective sustainable weight loss program that promotes healthy eating and exercise.

Professor Dragan Micic, EASO Vice-President for the Southern Region and Vice Dean Faculty of Medicine of the University of Belgrade (Serbia), explained that the prevalence of obesity in Europe is increasing, specially in Southern Europe. Obesity represents a large market for new products and economic growth in Europe. In this sense, the innovation in obesity research includes the development of new technologies and new pharmaceutical products/procedures to achieve weight loss. Prof. Micic stated that the lack of nutritional education and the decrease of physical activity is associated with an increased prevalence of obesity.

The management task forces to prevent obesity in Serbia includes the reduction of the promotion of energy-dense food and beverages, particularly to children, as well as the construction of safer roads to promote cycling and walking. There is also a need of effective weight loss programmes, and in this regard, Weight Watchers® programme achieved a statistically sustained weight loss at 1 year compared to primary care programmes. Future research is needed to explore the optimal duration of weight loss programmes.

Claude Marcus, Professor in Pediatric Medicine at Karolinska Institute (Sweden), gave his interesting point of view about the need of novel political strategies to prevent obesity in Sweden. The prevalence of obesity in Sweden has also increased, and current financial support to manage the obesity problem is focused on bariatric surgery, that represents an effective treatment for severely obese patients, increase the taxes for fatty/sugar-rich foods and alcohol as well as to decrease the prices of fruits and vegetables. Novel political strategies to tackle obesity are need, but politicians are usually conservative and analyze the cost-effectiveness of new approaches from a very short period of time that is not enough to show their real efficacy. Prof. Marcus also stated that novel commercial anti-obesity drugs are appearing in the market, but they should work with evidence-based methods and should be sold at reasonable pricing.

Nicholas Fuller, Dietitian and Exercise Physiologist at the Boden Institute in the University of Sydney (Australia), explained an interesting randomised controlled trial performed in Germany, Australia and United Kingdom designed to compare the weight loss achieved after 12 months by standard treatment in primary care with that achieved after referral by the primary care team to a commercial provider in the community (Weight Watchers®). Both standard and commercial programmes showed an effective weight loss in the three countries, but participants in the commercial programme group lost twice as much weight as did those in the standard care group. Weight Watchers® provides regular weighing, and promotes a hypoenergetic balanced diet based on healthy-eating principles, increased physical activity, and group support, compared with provision of standard weight loss treatment by primary care providers. Thus, governments may consider funding cost effective commercial programmes in preference to general practitioner visits to managing overweight and obesity.

Special Session: EASO Young Investigators United (supported by Cambridge Weight Plan)

The YIU Board members, Dr. Gijs Goossens (Netherlands), Dr. Teodora Handjieva-Darlenska (Bulgaria) and Dr. Amaia Rodríguez (Spain), chaired the EASO Young Investigator United (YIU) session, which was financially supported by Cambridge Weight Plan. Dr. Goossens introduced this session by explaining that YIU is part of the European Association for the Study of Obesity (EASO) and was founded in 2005. YIU is the communication platform for all young/new professionals working in this field, and aims to facilitate the networking of young European scientists, provide an arena for the exchange of ideas and best practices between experts and experts-to-come, and improve opportunities for future collaborations or consultations when heading for the common goal: preventing and treating obesity.

This year's YIU session included two presentations by the nominees for the YIU Best Thesis Award, Dr. Florian Kiefer (Harvard Medical School, Boston, USA) and Dr. Silvie Timmers (Maastricht University Medical Centre, Maastricht, The Netherlands), and two presentations by senior scientists Dr. Luca Busetto (University of Padova, Italy) and Prof. Johannes Hebebrand (University of Duisberg-Essen, Germany).

Dr. Florian Kiefer presented interesting data on the effects of osteopontin (OPN), and its interaction with monocyte-chemoattractant protein (MCP)-1, on adipose tissue inflammation and insulin resistance. He demonstrated that after feeding high-fat diet to induce obesity, mice lacking OPN gene displayed markedly improved insulin sensitivity compared with their wild-type littermates. Genetic OPN deficiency only moderately reduced obesity-induced adipose tissue inflammation and did not significantly affect macrophage accumulation. Targeting OPN action by a neutralizing antibody for five days significantly improved insulin sensitivity in diet-induced obese mice. Anti-OPN treatment attenuated adipose tissue macrophage infiltration and inflammatory gene expression and significantly reduced deleterious signal transduction related to insulin resistance. Notably, combined deletion of OPN and MCP-1 led to augmented diet-induced obesity and insulin resistance compared to control mice. Dr. Kiefer concluded that targeting OPN action could provide a novel approach for the treatment of obesity-associated metabolic disorders.

Dr. Silvie Timmers presented a series of elegant studies to unravel the role of diacylglycerol (DAG) in insulin resistance. She demonstrated that numerous factors are likely to determine whether increased fatty acid supply to skeletal muscle leads to the accumulation of lipid metabolites in skeletal muscle and whether these lipid metabolites will cause insulin resistance. In that respect, she has shown that dietary fatty acid composition (saturation and chain length) can influence the partitioning of fatty acids in skeletal muscle. Also, the activities of enzymes involved in DAG metabolism play an important role in whether or not muscle lipid accumulation will cause insulin resistance. Furthermore, Dr. Timmers explained that supplementing the diet with natural compounds (e.g. alpha lipoic acid, a natural short-chain fatty acid and recognised AMPK activator; resveratrol, a natural polyphenolic compound) can redirect fatty acids in skeletal muscle towards oxidation, by impacting on mitochondrial function.

Dr. Luca Bussetto provided an excellent overview of studies on bariatric surgery, showing beneficial metabolic outcomes of bariatric surgery. Importantly, Dr. Bussetto also stressed the importance of lifestyle changes, and highlighted the pros and cons of bariatric surgery.

Next, Prof. Johannes Hebebrand, Editor-in-Chief of *Obesity Facts*, explained how to write a world-class scientific paper in a very entertaining presentation. He discussed the importance of the title and abstract of a manuscript, since this is what Editor's pay attention to in first place when deciding whether or not to send the manuscript out for review. Furthermore, an important lesson is that, as a student, you should realize that you and your supervisor are a team, heading for the same goal. Therefore, bear this in mind when you receive (major textual) feedback from your supervisor. In the end, the result will be an improved manuscript.

At the end of this session, the Award Ceremony took place. First of all, the jury pointed out that both theses were of excellent quality, as were the presentations. Nevertheless, there can only be one winner. The jury decided that Dr. Florian Kiefer received the Young Investigators United Best Thesis Award 2012. After the scientific part of the program, a social get-together was organized for all young investigators.

FRIDAY 11 May 2012

Plenary Lecture: GLP-1: from bench to patients

This plenary session was chaired by Prof. Gema Frühbeck, President of the EASO, and Prof. Charles Thivolet, from the Department of Endocrinology, Diabetes, and Nutrition of Hopital Lyon-Sud (INSERM 1060, Lyon, France).

Prof. Jens Juul Holst (NNF Center for Basic Metabolic Research, Department of Biomedical Sciences, Panum Institute, Copenhagen, Denmark) gave an interesting presentation regarding the effects of glucagon-like-peptide-1 (GLP-1) on appetite regulation and insulin secretion as well as the use of GLP-1 agonists as weight loss and anti-diabetic agents. GLP-1 is a post-translational cleavage product of proglucagon that stimulated glucose-induced insulin secretion while inhibiting glucagon secretion. Prof. Holst explained that both intracerebroventricular and intravenous administration of GLP-1 inhibits food intake, and that obesity is associated with low GLP-1 levels. GLP-1 is released in response to meals from intestinal endocrine L-cells. Interestingly, morbid obese patients undergoing restrictive bariatric surgery have an exaggerated GLP-1 response due to an abnormal exposure to nutrients in the intestine, leading to a dramatic stimulation of insulin secretion and to an improvement and/or resolution of type 2 diabetes. Prof. Holst also explained the plausible role of GLP-1 agonist for achieving weight loss in obese patients. In this sense, liraglutide, a long-acting GLP-1 analogue, decreases food intake and body weight in experimental animal models of obesity by activating the expression of anorexigenic CART and blocking the expression of orexigenic peptides AgRP and NPY in the hypothalamus.

Review Sessions: How can we improve behaviour and make obesity interventions more effective

Dr. T. Robinson (Stanford University, Stanford, USA) talked about new ways to improve the design of population- and family-based interventions to prevent and control obesity. He pointed out that most of the biomedical research is focused on identifying problems. In contrast, the solution-based research is focused on answering practical questions on what work and how. Dr. Robinson explained that the solution-based paradigm drives the researchers to explore novel, theory-driven intervention strategies and the process of change, rather than solely the outcome. This approach led to the development of Stealth Interventions that emphasize the incentive value of intervention activities themselves. Dr. Robinson explained that the Stealth Intervention principles have been applied to successfully prevent and control weight gain in both population-based and overweight samples of children; through interventions to reduce children's screen time and increase physical activity through dance and participation in team sports. Furthermore, he pointed out that this novel strategy led to the development of interventions that harness the motivational effects of social and ideological movements to promote greater magnitude and more sustained changes in behaviour.

Dr. J. Kesten (Loughborough University, Centre for Global Health and Human Development, (Loughborough, United Kingdom) talked about the role of community readiness in reducing the risk of overweight and obesity in a UK community of pre-adolescents. She presented a study which has assessed the level of community readiness (CR) within the Charnwood Borough, Leicestershire. In this study 33 key informants, identified by pre-adolescent girls as informing their health behaviours, were recruited. Semi-structured interviews followed an adapted version of the Community Readiness Model (CRM). Dr. Kesten explained that the CR level for this community was 7, defined as stabilisation, meaning efforts to promote health behaviours in pre-adolescents. However, the study showed that barriers for programme effectiveness were identified. Dr. Kesten concluded that whilst the CRM has identified existing facilitators to promote health behaviours in pre-adolescent girls, it also identified social inequality as a potential barrier to successful intervention.

Dr. A. Giboreau (Institut Paul Bocuse Research Center, Ecully, France) talked on labels as possible nudges for 8-11 year old children to choose and consume vegetables in school restaurants. Dr. Giboreau gave some introduction that vegetables are a difficult category to introduce in children's diet and their consumption is particularly low, which is a major source of public health concern. She explained that previous research in the field showed two factors which are crucial in vegetables' liking: sensory preferences and familiarity. However, there is a lack of information and suggestions on how to increase vegetable familiarity in the context of their general sensory rejection. Dr. Giboreau presented a study which examined children's preferences for several food labels, and the influence of these labels on children's choice and consumption of two new recipes of carrots and broccoli. Dr. Giboreau showed that adding a food label referring to the name of the vegetable was an effective mean to increase the probability that children would choose this vegetables item. In conclusion, she pointed out the importance of food labelling on children's choice and underlined the importance of situational factors in food behaviour.

Special Session: EASO/WHO Regional Office for Europe: COSI Workshop

The special session of EASO/World Health Organization (WHO) Regional Office for Europe: Childhood Obesity Surveillance Initiative (COSI) Workshop was chaired by Dr. Tommy Visscher, Chair of the Netherlands Association for the Study of Obesity (NASO).

Dr. Trudy Wijnhoven (WHO Regional Office for Europe, Copenhagen, Denmark) showed data collected during 2007-2008 school year from 85,934 boys and 82,898 girls by the WHO European COSI with participation by thirteen Member States (Belgium, Bulgaria, Cyprus, Czech Republic, Ireland, Italy, Latvia, Lithuania, Malta, Norway, Portugal, Slovenia and Sweden). The purpose of COSI is to provide anthropometric measurements of primary school children (6-9 years) by analysing their weight and height using standardised techniques. The cut-offs for overweight and obesity were a BMI-for-age (BMI/A) above +1 Z-score and above +2 Z-scores, respectively. Inter-country comparisons suggested a North-South gradient of obesity with the highest prevalence of overweight found in southern European countries. The prevalence of obesity in countries with high BMI/A values ranged from 12-27% in boys and 8-17% in girls.

Dr. Ana Rito (National Institute of Health Dr. Ricardo Jorge, Lisbon, Portugal) presented data collected from COSI Portugal during 2008 (1,947 children of 7 years) and 2010 (1,967 children) in order to monitor the trends in childhood overweight and obesity in all the regions of Portugal. Dr. Rito explained that the lowest prevalence of overweight and obesity is found in the southern region of Portugal and the highest prevalence was found in the islands. Interestingly, Dr. Rito exposed that 98.3% of schools have playgrounds that improve the physical activity of children, and regarding the nutritional survey at school, 91.8% of schools provide milk to children, but only 12% give fruit to children. Dr. Rito highlighted a decrease in overweight Portuguese children was detected in 2010 as compared with data of 2008, probably due to media attention and policy initiatives that started in 2007 to prevent childhood obesity.

Dr. Lotta Moraëus (Department of Public Health and Community Medicine, Public Health Epidemiology Unit, Sahlgrenska Academy, University of Gothenburg, Sweden) presented the anthropometric data collected from 4,538 children (7-9 years) from Western Sweden in 2008 and 2010 according to the protocol of WHO COSI initiative. Dr. Moraëus explained that overweight was found in 17% of the Swedish children including 3% obese. Moreover, the high-education areas were associated with lower prevalence of overweight and obesity, supporting the earlier reports identifying areas of low-economic status as high-risk areas for childhood overweight and obesity. After the follow-up of 2 years, almost all the children were maintained in the same category of thinness, overweight or obesity.

Dr. Maria Hassapidou (Alexander Technological Educational Institute, Department of Nutrition and Dietetics, Thessaloniki, Greece) showed the anthropometric data of 5,701 children aged 7-8 years (2nd elementary school grade) and 9-10 years (4th elementary school grade) from 150 primary schools obtained for the WHO COSI initiative in Greece. The prevalence of slim, normal, overweight and obese children in second grade children was 3.78%, 59.53%, 23.03% and 13.60%, respectively, whereas in the fourth grade was 3.78%, 53.93%, 28.87% and 13.42%, respectively. Dr. Hassapidou explained that most of the schools dedicate 1-2 h/week to physical activity and 98.08% of the schools have playgrounds. Regarding the nutritional survey at home and school, 60% of Greek children have breakfast everyday at home, and 31.4% of schools provide milk to children and only 21% give fresh fruit to children. Dr. Hassapidou highlighted the high prevalence of overweight and obesity in Greece and the importance of breakfast consumption, healthy eating and physical activity to prevent childhood obesity.

Dr. João Breda (Programme Manager Nutrition, Physical Activity and Obesity, WHO Regional Office for Europe, Denmark) explained that the WHO has developed a 5-year operational plan (2012-2016) for the implementation of the European Strategy for the Prevention and Control of Noncommunicable Diseases. This ambitious action plan includes the coordination promotion of health in all policies, i.e. fiscal policies, salt and *trans*-fat reduction in food, the promotion of healthy settings in workplaces and school as well as secondary prevention through cardiometabolic risk assessment and management and early detection of cancer. There is approximately an 60% of prevalence of overweight (including obesity) in the WHO European Region. The priority actions of this interesting and promising action plan includes the coordination of national regional action for salt and *trans*-fat reduction, programmes for the promotion of physical activity, active transport policies, monitoring progress on improving nutrition, physical activity and obesity, as well as implement obesity prevention and control mechanisms based on the European Chapter to Counteract Obesity Principles.

EASO/Industry Session - Beyond BMI: Supported by Bodystat, GE Healthcare and Tanita

This satellite session was chaired by Prof. Gema Frühbeck, President of the EASO, and Prof. Volkan Yumuk from the Department of Medicine, Division of Endocrinology and Metabolism of the University Cerrahpasa Medical Faculty (Turkey).

Dr. Javier Gómez-Ambrosi (Metabolic Research Laboratory, Clínica Universidad de Navarra, CIBERobn, Spain) gave an outstanding presentation about the clinical usefulness of body adiposity determination, since BMI does not provide an accurate provide of body fat composition. Dr. Gómez-Ambrosi showed data of percentage of body fat (BF%) estimated by Bod-Pod® air displacement pletismography obtained from 6,123 subjects. He explained that 29% of lean subjects according to BMI are obese according to BF% cut-off values, whereas only 0.2% of obese subjects according to BMI are lean according to BF% cut-off values, suggesting a high missclassification according to BMI. Lean and overweight BMI-classified subjects with BF% within the obesity range showed increased levels of cardiometabolic risk factors, In addition, BF% was significantly higher in lean by BMI women with prediabetes or type 2 diabetes as compared to those with normoglycemia. Dr. Gómez-Ambrosi also presented the CUN-BAE (Clínica Universidad de Navarra-Body Adiposity Estimator) formula as a novel and accurate predictor equation to calculate BF%. He concluded that the inclusion of body fat composition will be helpful for diagnosis and follow-up of obesity.

Dr. Abdul Dulloo (Department of Medicine/Physiology University of Fribourg, Switzerland) explained the relevance of the fat free mass (FFM) in energy homeostasis. FFM, constituted by muscle and organs, and fat mass, comprising subcutaneous and deep visceral as well as gluteo-femoral fat, are matematically inversely related. FFM exerts a passive role in energy homeostasis by the facilitation of energy expenditure and also energy intake, since FFM has been associated with self-determined meal size. Furthermore, FFM plays an active role in energy balance since it constitutes the major site of adaptative thermogenesis, leptin and other adipokines regulate muscle size and FFM signalling controls driving appetite. In addition, Dr. Dulloo highlighted that skeletal muscle produces and releases myokines, such as myostatin, interleukin-6 or the recently discovered irisin that favours the conversion of precursor cells of adipose tissue to a brown-like phenotype.

Dr. L. Whitehead (United Kingdom) showed the usefulness of body impedance analysis (BIA) for the analysis of body composition. Impedance is the resistance to the flow of the current in a given body and, hence, the higher fluid content, the lower the impedance measurement value. BIA provides information of body cell mass (metabolic tissue and extracellular water), extracellular water, bone tissue and fat mass. BIA measures extracellular water at a low frequency of 5 kHz and total body water at a higher frequency of 200 kHz. Cell shrinkage is reflected in a weaker cell membrane and, consequently, in a decrease in intracellular water. The Bodystat® "Illness Marker" approach using two impedance values expressed as a ratio of 200 kHz / 5 kHz considers a healthy body cell in a range from 0.05-0.070, illness from 0.70-0.90 and the severe illness from 0.90-1.00.

Dr. David Ergun (Chief Scientist Lunar, GE Healthcare, United States) explained that dual-energy X-ray absorptiometry (DXA) is one of the most accurate methods to analyze body composition (lean, fat and bone mass in head, trunk, abdomen, arms and legs). There are two metabolic phenotypes according to fat distribution: android obesity, characterized by visceral fat accumulation, and ginoïd obesity, characterized by fat accumulation in the gluteo-femoral region. The GE Healthcare LUNAR iDXA with the CoreScan application is a system that quantifies visceral fat by using DXA. This application permits the distinction of visceral (VAT) and subcutaneous (SAT) adipose tissue, and shows a high correlation of calculated VAT with that obtained with X-ray computed tomography. An excess of VAT is linked to metabolic diseases. Since CoreScan is a reproducible method to quantify VAT in android obesity, this application is useful for clinical analysis in hypertension, impaired glucose tolerance, type 2 diabetes, dyslipidemia and the metabolic syndrome.

Dr. Angelo Pietrobelli (Pediatric Unit, University Medical School Verona, Italy) gave an interesting presentation about changes in FFM and fat mass from childhood to adulthood. Fat distribution depends on age, gender, ethnicity, hormones, dietary factors and physical activity. Adipose cell number is increased after birth and during the puberty. Dr. Pietrobelli also remarked the need to analyze body composition beyond BMI, since BMI does not distinguish between weight associated with muscle or weight associated with fat. BIA is only valid for the population that it is designed for, not for clinical research. The control of position, time of the day, room temperature, hydration, appropriate calibration and electrode placement must be taken into account when measuring the subject. Dr. Pietrobelli explained a study performed to analyze by BIA the percentile curves of FFM in 3,080 children aged 5-18 years. Girls showed a flat curve in early age and slight increase in puberty, whereas boys showed an increase in FFM across age.

Plenary Lecture: Uncovering the mechanisms of the homeostatic control of energy intake

This plenary session was chaired by Prof. D. Langin (INSERM U1048, Obesity Research Laboratory, Institute of Metabolic and Cardiovascular Diseases, Toulouse, France) and Prof. E. Nisoli (Department of Pharmacology, Chemotherapy and Medical Toxicology, School of Medicine, University of Milan, Milan, Italy).

Prof. J. Friedman (HHMI/Rockefeller University, Molecular Genetics, New York, USA) gave an excellent overview about his research on the role of leptin in the homeostatic system regulating body weight. First, he explained that leptin, a peptide hormone that is secreted by adipose tissue in proportion to its mass, is present in the circulation and acts on the hypothalamus to regulate food intake and energy expenditure. In circumstances of body fat loss, the resulting decrease in plasma leptin concentrations stimulates appetite (increased food intake) and decreases energy expenditure, thereby restoring adipose tissue mass. Vice versa, an increase in fat mass is accompanied by increased leptin concentrations, leading to opposite effects. Observations in patients with mutations in the leptin gene and studies with recombinant leptin treatment have clearly demonstrated involvement of leptin in body weight regulation in mice and some but not all humans. It is, however, not yet fully understood which brain regions are responsible for feeding behavior. More recent studies performed by Prof. Friedman have explored the relationship between leptin and the reward value of food. The molecular identity of neurons that trigger meal anticipation is as yet poorly defined. New methods (e.g. Phospho-TRAP) for identifying neurons activated by leptin and other stimuli have been developed, and can be applied to identify new drug targets.

Special Session: EASO Nordic Session: Cutting-edge obesity research from the Nordic countries

This special EASO Nordic session was chaired by Dr. F. Rasmussen (Child and Adolescent Public Health Epidemiology Group, Department of Public Health Sciences, Karolinska Institute, Stockholm, Sweden) and Dr. K. Pietilainen (Obesity Research Unit, Helsinki University Central Hospital, Helsinki, Finland).

Dr. T. Meindert Larsen (University of Copenhagen, Department of Human Nutrition, Denmark) presented a study (part of the OPUS project) in which the “new Nordic diet”, developed by a large number of stakeholders, was implemented using a “shop” approach. There were 1-3 weekly visits to the shop, and participants had ad libitum access to the food products, which were free of charge. Participants could prepare meals that were incorporated in the “New Nordic Cook Book”, containing about 180 recipes (in contrast to about 99 recipes in an average Danish diet cook book). Dr. Meindert Larsen performed a 26 week, controlled dietary intervention in 181 obese subjects (randomized to the “New Nordic Diet” or an “Average Danish Diet”), showing that the “New Nordic Diet” induced a more substantial reduction in body weight (3 kg difference), tended to increase insulin sensitivity, reduced blood pressure, decreased plasma triglycerides and total cholesterol, and tended to decrease C-reactive protein levels. He concluded that the “new Nordic diet” is a good alternative for the Mediterranean diet.

Next, Dr. R. Dankel (University of Bergen, Institute of Medicine, and Haukeland University Hospital, Bergen, Norway) gave an interesting presentation about obesity-genes. He presented microarray data on omental and subcutaneous from morbidly obese subjects before and after bariatric surgery. 67 candidate genes that may modulate intra-abdominal fat storage were identified. Furthermore, data from two large European GIANT meta-analyses of genome-wide association studies were interrogated. Interestingly, the gene set as a whole associated with waist-to-hip ratio, rather than BMI. Several of these genes encoded developmental homeobox transcription factors, indicating that these transcriptions factors may play a role in the development of intra-abdominal fat accumulation and elated diseases.

Therafter, Dr. Virtanen (Turku PET Centre, Turku, Finland) gave an excellent overview of studies on brown adipose tissue (BAT) in humans. She explained that functionally active BAT, which can be measured using positron emission tomography (PET), is present in most (70-90%) healthy lean humans during cold exposure, whereas the probability to detect BAT in obesity is decreased by ~30% in cold. Cold exposure increases BAT perfusion (2-fold; reflecting increased oxygen consumption) and glucose uptake (10-fold) compared with normal room temperature in lean subjects, whereas this response is blunted in the obese. Furthermore, Dr. Virtanen postulated that increased BAT activity may be involved in the clearance of triglycerides by adipose tissue, and may play a role in energy metabolism.

Finally, Dr. E. Hemmingsson (Karolinska University Hospital, Stockholm, Sweden) presented a search strategy for a systematic review and meta-analysis of randomized controlled trials (RCTs) evaluating the effects of weight-maintenance strategies after VLCD/LCD (randomized to weight-maintenance strategy group or usual care). 16 RCTs were found, and data-analysis is currently ongoing.

SATURDAY 12 May 2012

Plenary Lecture: Standing up for sedentary behaviour in obesity research

Dr. P. Katzmarzyk (Pennington Biomedical Research Center, Baton Rouge, USA) presented a very interesting issue on standing up for sedentary behaviour in obesity research. Dr. Katzmarzyk started by explaining that the emergence of obesity as a major public health issue has prompted efforts to understand the contributions of both energy intake and expenditure to the regulation of body weight. She pointed out the important role of moderate-to-vigorous physical activity levels in the prevention and management of obesity and related disorders. Dr. Katzmarzyk focused on the sedentary behaviour as a major role in the development of obesity, type 2 diabetes, cardiovascular diseases, and premature mortality. Further, epidemiological studies indicated that sedentary lifestyle may be a distinct, independent risk factor from chronic disease. It was established that long periods of sitting resulted in increased health risks among normal weight, overweight and obese adults, suggesting that the effects may be independent of body weight status per se. Dr. Katzmarzyk concluded that further research is needed to better understand and identify the mechanisms linking sedentary behaviour to health, and the extent to which it is independent risk factor for obesity and its comorbidities.

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