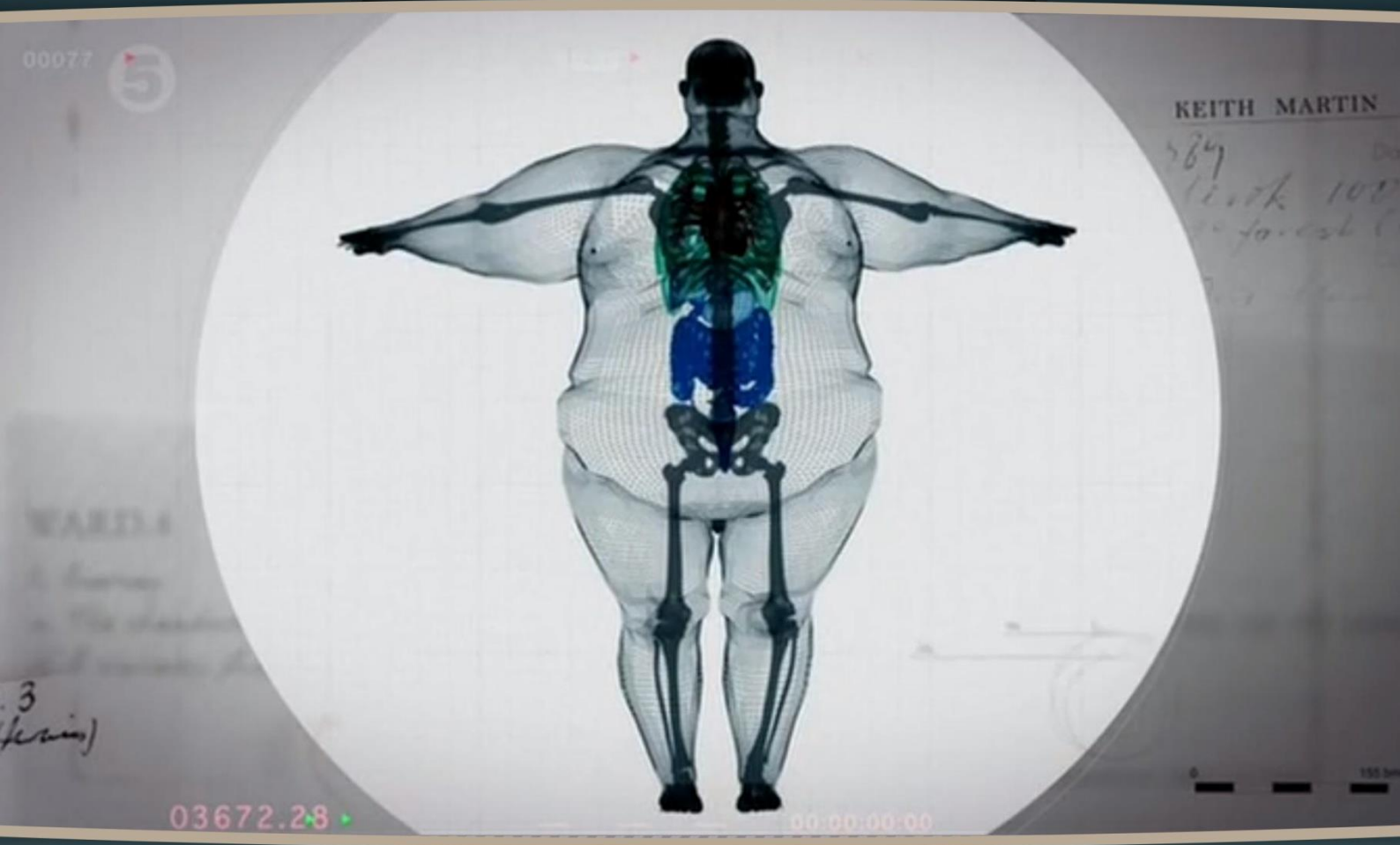
THE 2016 OBESITY SUMMIT

ABSTRACTS



12th - 14th April 2016
London, UK

EuroSciCon

Obesity and its related morbidities are widely recognised as some of the most important problems facing public health today; research in this field is ever growing. The obesity summit, which is now in its fourth year, will be an event spanning three days, bringing together lead scientists from all over the world to discuss and debate the main factors of obesity, its treatment and causes.

In an informal academic setting this event promises to offer opportunities to discuss a great variety of factors involved in obesity, including prediction, prevention, diagnosis and management, gene-environment interactions, drug discovery, fetal reprogramming, lipidomics and metabolomics.

This event has CPD accreditation

This abstract book will be finalised two weeks before the event
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Invited Speakers Abstracts

Mitochondrial function and dysfunction in adipocytes and obesity: analyses of uncoupling effects and Sirtuin 3 overexpression

Professor Thierry Arnould, Université de Namur ASBL, Belgium
Authors: Stéphane Demine1, Nagabushana Reddy1, Julie Storder1, Patricia Renard1, Eric Bell2, Leonard Guarente2 and Thierry Arnould1
1: UNamur (Namur, Belgium); 2: MIT (Cambridge, USA)
A strategy to tackle obesity would be to modulate the biology of mitochondria. For example, the uncoupling of mitochondria in adipocytes can limit the lipid accumulation in these cells. The effects of a mild mitochondrial uncoupling in 3T3-L1 adipocytes will be discussed as well as the effects of Sirtuin 3 (a mitochondrial deacetylase controlling several functions of mitochondria) overexpression in adipose tissues of transgenic mice on obesity triggered by a high fat diet regimen.

The impact of bariatric surgery on clinical depression

Dr Helen Booth, Primary Care & Public Health, King's College London, London, United Kingdom
We used a matched interrupted time series design to evaluate rates of clinical depression up to 3 years before, and 7 years after, bariatric surgery. There were 3,045 patients who received bariatric surgery, and the same number of controls, who were selected from the Clinical Practice Research Datalink. Depression was more common in surgery patients than controls at baseline. We found bariatric surgery was associated with a modest reduction in depression, that was not maintained long term.

Cultural Perspectives on Binge Eating, Body Image and Obesity

Professor Fary Cachelin, Professor and Chair of Psychology, University of North Carolina, Charlotte, USA
This presentation will include an overview of cultural and ethnic similarities and differences in body image, binge eating and obesity. Data on the presentation and frequency of these concerns in multi-ethnic populations will be presented, focusing particularly on whether symptoms and frequency differ as a function of ethnicity or race. Factors that predict health care utilization for eating and weight problems, as well as treatment delivery and efficacy in specific cultural communities will be identified. The role of culture and ethnicity in the development and treatment of disordered eating and obesity will be analyzed, and directions for future research and intervention will be discussed.

Digestive Adaptation and Metabolic Surgery

Dr Alper Celik, Turkish Metabolic Surgery Foundation, Metabolic Surgery Clinic, Istanbul, Turkey
Metabolic Syndrome threat and two of its most important components, obesity and type 2 diabetes have escalated in prevalence into such a magnitude that can only be described as an epidemic. Traditional treatment methods including life style changes, diet, exercise and medication have failed to achieve desired results for an important portion of patients. Currently, the most effective treatment for obesity and type 2 diabetes is surgical procedures. There is no treatment option that can achieve remission for the entire compounds of Metabolic Syndrome with high efficiency. However, it should be known that there are numerous methods used for the surgical treatment of metabolic syndrome and all of these methods have advantages, disadvantages and restrictions of their own. Also, each has their own rate of efficiency.
We, as surgeons working in this field should keep our responsibilities in mind. It is not appropriate to end one drug addiction while at the same time creating another one. That is why we should focus on providing ileal proximalisation without causing malabsorption, which is a disease itself as outlined by WHO. This attempt will provide a ‘‘functional restriction’’, rather than a ‘‘mechanical restriction’’. Functional restriction means providing metabolic satiety and insulinomimetic effect to the patients by activating ileal hormones. Mechanical restriction aims to decrease the food intake by creating a static obstacle, either as a small pouch, a narrow sleeve or an anastomosis. Mechanical restriction is the main point of obesity surgery procedures and that is why and where obesity surgery and metabolic surgery differ.
Ileal Transposition and Transit Bipartition are Metabolic Surgical procedures that aim to achieve functional restriction. Briefly, the method focuses on ‘‘interposing’’ a segment of ileum after the stomach and therefore maximize distal intestine activity, while at the same time transecting the duodenum to minimize proximal activity. These operations are complex and technically difficult operations which demands serious training and experience. But, is feasible and safe in the hands of well-trained and experienced teams. It should be noted that an excellent clinical order must also be present which includes pre-operative evaluation, post-operative monitorization and long term follow-up

Eating patterns and nutrient intake associated with obesity in older people

Dr. Jose Eduardo Corrente, São Paulo State University UNESP, Bioscience Institute, Botucatu, São Paulo, Brazil

This study aimed at identifying eating patterns and nutrient intakes associated with obesity in older adults living in an urban area and registered at the basic health unit in the municipality of Botucatu, São Paulo, Brazil. A validated food frequency questionnaire for older people were used to get eating patterns and this information were transformed in nutrient daily intakes. Associations among eating patterns and means comparisons of nutrient intakes were carried out.

Dietary protein and energy balance

Dr. Prasanth Chelikani, University of Calgary, Calgary, Canada

The 'protein leverage' theory postulates that increased dietary protein density would decrease caloric intake, whereas a deficiency in dietary protein would promote excess caloric intake to meet protein requirements. Though the satiety effects of high protein diets are well documented, less is known of the effects of low protein diets on energy balance. The peripheral mechanisms by which an excess or deficiency of dietary protein is sensed and signalled to modulate energy balance and metabolism are poorly understood. The behavioral, metabolic and molecular mechanisms that likely contribute to the divergent effects of dietary protein on energy balance will be discussed.

Amino acids, energy metabolism and obesity

Dr Amany Elshorbagy, Faculty of Medicine, University of Alexandria, Alexandria, Egypt

Plasma concentrations of several amino acids are elevated in human obesity and insulin resistance, but there is no conclusive evidence on whether the amino acid alterations are a cause or consequence of the obese state. Genetic and dietary studies in animals suggest that sulfur amino acids (SAA), in particular cysteine, are causal in obesity. Further, mouse preadipocytes cultured under low cysteine fail to differentiate into adipocytes or accumulate lipid. In humans, plasma cysteine is linearly and independently associated with fat mass. We explore the early changes in plasma amino acids that accompany short-term overfeeding in healthy humans, and link these findings to experimental and epidemiologic evidence on the associations of these amino acids with obesity.

Weight stigma: discrimination that continues to be unchallenged

Dr. Stuart Flint, Sheffield Hallam University, Sheffield, United Kingdom

In today's society, there is an abundance of evidence demonstrating that weight stigma is common and continues to go unchallenged in many settings. For instance, weight stigma has been reported in schools, workplaces and exercise settings. Evidence will be presented from a range of studies to demonstrate weight stigma is evident in the UK and that there a paucity of efforts to intervene.

How do genetic studies help us understand the obesity epidemic

Professor Timothy Frayling, Royal Devon & Exeter NHS Foundation Trust and University of Exeter medical school, Exeter, UK

I will discuss how research into the genetic component to obesity is informing our knowledge of the biology of weight gain. For example I will address the apparent paradox about genes and obesity. Our genes have not changed much in the last few decades and people did not used to be as overweight on average, and yet, twin and other family studies suggest a substantial genetic component to where you are on the BMI scale in today's environment. Genetic studies have taught us about the key role of the brain and also revealed molecular mechanisms that predipose individuals to higher BMI but lower risk of obesity related diseases such as type 2 diabetes, hypertension and heart disease.

Paternal obesity alters sperm non-coding RNAs, which can program embryo and offspring development

Dr Tod Fullston, University of Adelaide, The Robinson Research Institute, Adelaide, Australia

Obesity and related comorbidities are increasingly globally prevalent. We and others have previously demonstrated that a paternal high fat diet (HFD) can program two generations of mice for reproductive and metabolic disturbances. We now demonstrate that a paternal HFD also shifts the sperm mircoRNA profile. Some of these miroRNAs were altered by the HFD, are sperm specific, and are amongst the most abundant sperm microRNAs. Experimentally validated, developmentally important mRNA targets (Oct4, Sox2) of a sperm specific microRNA have altered expression in zygotes sired by HFD males. This suggests sperm microRNAs can act as agents of paternal programming of obesity.

Obesity and Insulin Resistance Are the Central Issues in Prevention of and Care for Comorbidities

Dr. Ellen Govers, VU University Amsterdam, Amsterdam, Netherlands

For a long time comorbidities of obesity were far more important and needed treatment even if weight loss was not a treatment goal, preferably with medication.This leads to raising the health care costs to unacceptable levels. The central problem is insulin resistance which should be diagnosed in primary practice and obesity clinics, to ensure a better tailor-made treatment for patients. Treatment should start at the earliest stage possible, when comorbidities are still reversible and includes a personalized dietary advice and counseling preferably by a dietitian to tackle insulin resistance. An exercise program is part of the treatment.

Awkward Adiposity?

Mrs Lesley Gray, University of Otago, Wellington, New Zealand

This presentation will report on a trilogy of research projects underway in New Zealand by Caz Hales and Lesley Gray to support safe, appropriate, equitable health care for very large patients.

In New Zealand 67% of Pacific adults and 47% of Maori adults are obese and disproportioately represented across a range of indicators for chronic diseases and premature death.

We examined the language of obesity in New Zealand and set out to observe and measure whether a novel intervention could reduce explicit weight stigma and bias by health professionals towards obese people using training and experiential scenarios.

Abdominal pain after bariatric surgery causes and management

Dr Muhammad A Jawad, Department of Bariatric Surgery, Orlando Regional Medical Center & Bariatric and Laparoscopy Center, Orlando Health, Orlando, FL, United States

Abdominal pain after bariatric surgery is a common complain that most of the time require emeregency room visit, diagnosis and management can be challenging and difficult, knoledge of the procedure that was performed is critical to initiate the proper work up for the diagnosis of this problem.

I am presnting to you the complications and the management of ,gastric band, gastric bypass,vertical banded gastroplasy, vertical sleeve gastrectomy and billiary panceriatic diversion with duodenal switch

Development of hypothalamic satiety centres

Dr. Deborah Kurrasch, University of Calgary, Calgary, Canada

In this talk, I will describe studies we have conducted to delineate the cellular and molecular mechanisms that guide the formation of neurons into discreet hypothalamic nuclear subdomains to which different metabolic and behavioral responses are linked. In particular, I will emphasize the genetic, molecular, and imaging techniques we use to determine how key metabolic neurons become specified and migrate, and how disruption in these normal processes might contribute to the onset of obesity.

How Much Difference Does Exercise Make in the Treatment of Obesity?

Professor Edward Laskowski, Mayo Clinic, Rochester, MN, USA

Significant research has been performed on the effects of exercise for the reduction of body weight, with most studies indicating that exercise alone has a small effect on body weight reduction independent of caloric restriction. When combined with dietary restriction, exercise has a synergistic effect and enhances weight loss beyond the effect of diet alone. Exercise also has been shown to have significant beneficial effects on cardiovascular and metabolic risk factors independent of actual weight loss, and genetic factors related to obesity have been found to be positively modified when individuals incorporate physical activity into their lifestyle.

Impact of the vitamin D on adipose tissue biology

Dr. Jean-François Landrier, Aix-Marseille University, Marseille, France

Prospective studies provide interesting data supporting the hypothesis of a preventive role of vitamin D on onset of obesity. In agreement, recent studies in vitro and in animal models tend to demonstrate an impact of vitamin D and Vitamin D Receptor on adipose tissue and adipocyte biology, that could support at least in part a causal role of vitamin D insufficiency on obesity and associated physiopathological disorders such as adipose tissue inflammation and consecutive insulin-resistance. The aim of the present review is to summarize data available regarding relationships between vitamin D, adipose tissue / adipocytes physiology and obesity.

Liraglutide protects diet inducued obesity through elevation of energy expenditure

Dr. Lixin Li, Central Michigan University, Mt Pleasant, United States

Obesity is a risk factor for type 2 diabetes, coronary artery disease. Glucagon like peptide -1 (GLP-1), has demonstrated the weight loss effect in type 2 diabetes patients. Brown adipose tissue which plays a major role in control of energy balance in rodents may be involved. We found that liraglutide (a long acting GLP-1 agonist), activated brown fat differentiation in C2C12 myoblasts, a cell line known to differentiate into brown adipocytes after stimulation. Liraglutide also induces brown fat adipogenesis as evidenced by the induction of brown fat enriched specific genes in both skeletal muscle tissue and white fat tissue in mice. Our study indicates that GLP-1 and its analogues are potential therapies for obesity.

Structural equation model of the linkages between obesity and poverty in a longitudinal birth cohort at 30 and 35 years

Dr Geraldine (Geri) McLeod, Research fellow, Christchurch Health & Development study, Department of Psychological Medicine, University of Otago, Christchurch, NZ

Research has shown a consistent link between poverty/socioeconomic disadvantage and adiposity. However most research has been cross-sectional. This study uses latent variable structural equation modelling to examine the longitudinal associations between a comprehensive measure of adult socioeconomic disadvantage at age 30, and obesity assessed at ages 30 and 35 in a New Zealand birthcohort. Increasing socioeconomic disadvantage was significantly associated with both greater obesity at age 30 and greater increases in obesity between ages 30-35. These findings were not explained by the confounding effects of childhood disadvantage, nor by other adult risk factors. Implications of these findings are discussed.

Maternal high fat diet affects epigenetic programming of hypothalamic mechanisms, a pathway towards obesity in their offspring.

Professor Noam Meiri, Department of Poultry Science, Institute of Animal Science, Agricultural Research Organization, The Volcani Center, Bet Dagan, Israel

Parental overeating can affect the children's likelihood to develop obesity. Changes in epigenetic programming have been implicated as one of the mechanisms underlying this phenomenon. Using a rat model, we designed a study in which we exposed only the first generation to chronic high fat diet (HFD) and followed the effect on two consecutive generations of standard fed offspring. We focused on the promoter of the hypothalamic neuropeptide Pomc, which is crucially involved in control of food intake. HFD consumption by non-mated female rats (F0) significantly increased body weight and plasma leptin levels and attenuated Pomc mRNA expression. This was associated with hypermethylation and altered posttranslational modifications of histone H3 lysine 9 (H3K9) at the Pomc promoter in their F1 and F2 offspring.

This combined DNA and histone methylation produces a repressor complex potentially attenuating the expression of Pomc. These findings contribute to our understanding of the mechanisms through which environmental cues are translated into stable changes in the Pomc gene, leading to obesity.

Management of Obesity in individuals with complex medical illnesses

Dr. Khin Swe Myint, Norfolk and Norwich University Hospitals NHS trust, Norwich, United Kingdom

While bariatric surgery is considered to be primary option for severe obesity with co-morbidities, it may not be appropriate for many obese individuals or they may decline surgery. Complex medical patients need a specialist multi-disciplinary approach for optimising their health while managing their obesity. Some of those challenging cases include patients on large dose insulin (type 1 or type 2), lipodystrophy, end stage renal failure, endocrinopathy (hypothalamus/pituitary disease), patients on steroid therapy, anti-psychotic medication, and individuals with mental illness or learning difficulty. This session will focus on how we could individually tailor their obesity management and optimising their medical illnesses.

Revisional surgery after weight regain after bilio-pancreatic diversion with duodenal switch

Dr. Philipp Nett, Bern University Hospital and University of Bern, Bern, Switzerland

Weight regain after biliopancreatic diversion with duodenal switch (BPD-DS) is often seen in the longterm. Re-sleeve gastrectomy (re-SG) is an option to increase weight loss after BPD-DS. We report our experience of 17 patients undergoing re-SG. BMI before BPD-DS was 46.1±6.5kg/m2 and the time between BPD-DS and re-SG 63.1±20.3months. BMI before re-SG was 39.8±5.3kg/m2 with %EWL of only 22.9±17.4%. Follow-up was 37.2±7.1months after re-SG. One- and three years follow-up showed a BMI of 33.8±7.3kg/m2 and 35.1±8.3kg/m2, respectively. This study proofs that re-SG in patients with weight regain after BPD-DS is a feasible and safe option as a revisional bariatric procedure.

Obesity alters adipose stem cell niche

Dr. Niketa A. Patel, University of South Florida, Tampa, United States

Adipose-derived stem cells (ASC) from white adipose tissue have tremendous potential in regenerative medicine and hence we sought to characterize ASC from subcutaneous and omental adipose depots. We evaluated ASC from lean and obese patients. We demonstrate that obesity changes the stem cell niche and the adipose secretome.

The dangerous link between Obesity and Mental Illness

Dr Margarita Rivera, PhD, Marie Curie Senior Researcher, Centro de Investigación Biomédica, Universidad de Granada, Granada, Spain

People with major psychiatric disorders (major depression, bipolar disorder, schizophrenia), particularly with mood disorders, have higher prevalence of comorbid medical conditions, such as obesity, diabetes and cardiovascular diseases. Besides, comorbid mental and medical conditions are associated with substantial individual and societal economic cost. Specifically, obesity and depression are leading causes of disease burden and disability, as well as major public health concerns worldwide. Both conditions are highly prevalent and major risk factors for chronic physical diseases such as type 2 diabetes, cardiovascular disease and hypertension. The reason why obesity and depression cluster together is not totally understood and several mechanisms have been proposed. There are many factors driving this observation, such individual lifestyle choices, eating patterns, socioeconomic factors, psychosocial stress, disparities in health care, medication, as well as biological and genetic factors. The talk will highlight the existing evidence of the relationship between obesity and mental illness.

Weight Loss Modelling

Mr. Miguel Ángel Rojo Tirado, Technical University of Madrid, Madrid, Spain

Obesity can be defined as a chronic metabolic disease from a multifactorial origin, which leads to physical and psychological impacts to the person, with associated pathologies that limit the life expectancy and deteriorate the quality of it. This chronic metabolic disorder is characterized by an excessive accumulation of energy in the body as fat, leading to increased weight relative to the value expected by sex, age and height. The aim of this speak is to contribute to clarify the evolution of the body weight during a diet and exercise intervention.

Anesthetic Challenges in the Surgical Cure for Morbid Obesity

Dr. Ashish C Sinha, Drexel University College of Medicine, Philadelphia, United States

As larger and larger patients present for weight loss surgery; the surgical treatment for obesity, the anesthetic challenges in these patients continue to grow.

From IV start to intubation and ventilation, extubation to post-operative pain management, are all big problems which can almost always be successfully handled with an algorithmic series of steps. Such challenges will be discussed with multiple patient examples (with photographs) in the 200, 300 kgs and even larger weights, (BMI from 80 to 110 kg/m2).

Cognitive Behavioral Therapy (CBT) in Obesity

Professor Daniel Stein, Director, Pediatric Psychosomatic Department, Edmond and Lily Safra Children's Hospital, Chaim Sheba Medical Center, Tel Hashomer, Israel, Sackler Faculty of Medicine, Tel Aviv University, Israel

Many people with obesity and overweight are dieting for considerable periods of time, going through repeated vicious circles of losing and regaining weight. While many such individuals wander from one diet to the other, adhering to the most recent dieting program only to be disappointed once again, two important cognitive behavioral therapists and researchers, Christopher Fairburn from the UK and Judith Beck from the USA, advocate the use of cognitive behavioral techniques to tackle weight regain following weight loss. These techniques - advocating stepwise moderate weight-reduction that assists the individual to continue enjoy eating while practicing treatment - will be discussed in this lecture.

The development of a novel duodenal switch technique - the SOFY procedure

Dr. Axer Stephan, Torsby Hospital, Torsby,Sweden

The biliopancreatic diversion with duodenal switch (BPD-DS) is considered to be the most effective bariatric procedure for introduction and maintenance of weight loss and resolution of obesity-related co-morbidities. In 1999 a laparoscopic approach for the DS procedure was introduced. Study results concerning postoperative complication rates are inconsistent. This might be a result of the complexity of the surgery.

The development of the SOFY procedure persued the target to enhance the surgical workflow, offer a better overview of the correct positioning of the different limbs, and to facilitate the closure of the mesenteric defects.

Mechanisms of heart failure in obesity

Dr Gary Sweeney, York University, Toronto, Ontario, Canada

Cardiovascular disease, including heart failure, is a principal cause of death in individuals with obesity. Accordingly, there is currently great research and clinical interest in the endocrine effects of adipokines on the myocardium and their role in heart failure. This presentation will discuss the potential significance of adiponectin in the pathogenesis of heart failure inobesity. Regulation of remodeling events including metabolism, hypertrophy, fibrosis, autophagy and cell death will be considered. There is undoubted potential for the use of various adipokines as robust biomarkers and bona fide therapeutic targets in heart failure.

Long-term outcomes after bariatric surgery: The Swedish Obese Subjects (SOS) study

Professor Kajsa Sjöholm, Department of Molecular and Clinical Medicine, Institute of medicine, The Sahlgrenska Academy at Gothenburg University, Sweden

The Swedish Obese Subjects (SOS) study is a long-term, prospective, controlled trial to study the effects of bariatric surgery on the incidence of hard endpoints. The SOS study involved 2010 obese subjects who underwent bariatric surgery and 2037 matched controls receiving usual care. The age of participants was 37-60 years and BMI was ≥34 kg/m2 in men and ≥38 kg/m2 in women. The follow-up time is up to 20 years. Compared with usual care, bariatric surgery was associated with decreased incidences of diabetes, myocardial infarction, stroke and cancer and increased diabetes remission. High insulin and/or high glucose at baseline, predicted favourable treatment effects, whereas baseline BMI did not.

Brown adipose tissue as an anti-obesity target

Professor Michael Symonds, Obstetrics & Gynaecology School of Medicine, Queen's Medical Centre University Hospital, Nottingham, UK

The role of brown adipose tissue (BAT) in regulating body weight in humans remains controversial, although it may be more important in regulating glucose homeostasis. BAT is the least abundant fat in the body but is characterised as possessing the unique uncoupling protein (UCP)1 which has the capacity to maximally generate 300 times more heat than any other tissue. The potential to evaluate and manipulate the function of BAT by dietary and endocrine interventions will be summarised.

Mechanisms of glucose lowering after bariatric surgery

Dr. Adrian Vella, Mayo Clinic, Rochester, United States

The contribution of bariatric surgery to resolution of diabetes is not completely resolved. Mechanical factors, caloric restriction and incretin hormone changes may all contribute to glucose lowering and may inform future therapies of type 2 diabetes and obesity.

Bariatric psychology

Dr. Gerbrand Van Hout, Catharina Hospital Obesity Centre, Eindhoven, Netherlands

Bariatric surgery is the only evidence based treament for morbid obesity. However, a significant minority of patients is not succesfull because of non-compliance to the guidelines. Compliance is substantially related to psychosocial factors. According to the guidelines of the Dutch Association of Bariatric Psychologists, in full dedication to the morbidly obese, we offer pre- and/or postoperative treatment to patients opting for bariatric surgery.

Mental health in children and adolescents with severe obesity

Dr. Grete Katrine Teilmann, Nordsjællands Hospital, Hillerød, Denmark

Recent research has suggested new ways to approach to childhood obesity that focuses more on holistic measures of health including psychological well-being. We studied central domains of mental health and well-being in children and adolescents with severe obesity including self-rated health, life satisfaction, emotional well-being, body-image, self-esteem and self-efficacy by use of validated questionnaires from Health Behaviour in School-Aged Children study (HBSC). The results will be discussed as well as the development of innovative interventions focusing on individualized assessment and care, including a mental health assessment and appropriate treatment.

Adiposity and Health-Related Outcomes After Knee Joint Injury in Youth Sport

Dr. Clodagh Toomey, University of Calgary, Calgary, Canada

Intra-articular injuries to the knee during youth sport have been identified as a major risk factor for post-traumatic osteoarthritis. In addition, a high index of adiposity can influence the development of knee osteoarthritis through both mechanical (increased joint load) and systemic (metabolic-triggered inflammation) factors. A combination of these features may compound the risk of disease development and progression. Thus, we have identified potential modifiable risk factors (i.e. physical activity, lifestyle and diet), to target reducing the increased adiposity seen in these youth and shift the focus from disease management to disease prevention.

How to successfully maintain weight loss

Professor Signe Sørensen Torekov, University of Copenhagen, Copenhagen N, Denmark

Obesity impairs almost all aspects of health and is a global challenge to our healthcare system as the prevalence reaches 1 billion humans. Therefore, there is an acute need for better prevention and treatment strategies. Glucagon-like-peptide-1 (GLP-1), secreted from endocrine cells in the intestine upon meal intake, reduces food intake. We have previously shown that: 1) obese people have low endogenous GLP-1 response; 2) weight loss induces a marked increase in GLP-1 response, and 3) treatment with GLP-1 analogues facilitates long term weight loss maintenance (12 kg) accompanied by substantial improvement in metabolic health, compared to diet-induced weight loss maintenance. Chronic inflammation is an established part of the pathogenesis of obesity, and activation of macrophages and T cells in the expanded adipose tissue is coupled to the development of a pro-inflammatory state and insulin resistance. Interestingly, emerging evidence identifies GLP-1 as a potentially important immuno-modulator. GLP-1 decreases inflammation-associated gene and protein expression in macrophages and exerts anti-inflammatory actions in adipocytes and endothelial cells as well as potent anti-inflammatory effects in humans.

Epigenetic Signatures of Obesity

Dr Manlio Vinciguerra, University College London, Royal Free Hospital, Royal Free Campus, London, United Kingdom

Obesity results from interactions between environmental and genetic factors. Genetic variants do not fully explain the heritability of obesity. Epigenetic marks, or “imprinting”, affect gene expression without actually changing the DNA sequence. Failures in imprinting are known to cause extreme forms of obesity (e.g. Prader–Willi syndrome), but have also been convincingly associated with susceptibility to obesity. Furthermore, environmental exposures during critical developmental periods can affect the profile of epigenetic marks and result in obesity. I will review the most recent evidence for genetic and epigenetic mechanisms involved in the susceptibility and development of obesity.

The family “halo effect” of laparoscopic sleeve gastrectomy

Dr. Pierre Verhaeghe, CHU Amiens-Picardie Site Nord, Amiens, France

Are results of LSG performed for several members of a family different to control group of individuals?

LSG-family group, 78 LSG patients from 39 families, matched 1:1 with 78 LSG group selected from among 550 LSG patients whose family members had no bariatric surgery. LSG-family 1 subgroup operated before LSG-family 2 subgroup.

Median BMI was 48.1 kg/m2, LSG-family and LSG groups 24 months after surgery had mean BMIs 28.6 and 32.5 kg/m2 ($p \leq 0.01$), EWLs 83.5 % and 71.4 % ($p \leq 0.01$).

Outcome for LSG, in terms of EWL was better in family group than in control group.

Resistance to obesity and associated disorders in Noonan syndrome with multiple lentigines

Dr Armelle Yart, INSERM, Toulouse, France

Noonan syndrome with multiple lentigines (NS-ML) is a rare genetic disease associating multiple congenital anomalies (cardiopathies, growth delay, dysmorphism) and tumor predisposition. NS-ML is mainly caused by missense mutations of the gene encoding Shp2, a tyrosine phosphatase that plays pivotal roles in development and energy homeostasis. We identified that an original mouse model of NS-ML displays reduced adiposity and improved carbohydrate metabolism, that translates into resistance to obesity and associated disorders (ectopic lipid deposits, insulin resistance) upon high-fat-diet. Preliminary analysis of data from NS-ML patients corroborates these findings. This could help better understanding NS-ML pathophysiology, but also common metabolic disorders.

Day 1:

Oral Presentation Abstracts

Oral presentations will be added after the submission deadline

LIPOCALIN-2 IS ELEVATED IN OBESITY AND INDUCES CARDIAC REMODELING LEADING TO HEART FAILURE

HK Sung, YK Chan, E Song, M Han, JWS Jahng & G Sweeney
4700 Keele Street 110 Farquharson Building Department of Biology, York University, Toronto, Canada, M3J2S5

Lipocalin-2 (Lcn2; also termed neutrophil gelatinase-associated lipocalin (NGAL)) is a proinflammatory factor which is elevated in obese individuals. It has also been implicated in the pathogenesis of heart failure and as a potential biomarker. Here we investigated effects of Lcn2 on cardiac autophagy, cell death and insulin sensitivity. We used coronary artery ligation surgery to induce ischemia in wild type (wt) and Lcn2 knockout (KO) mice. Lack of Lcn2 protected against ischemia-induced cell death and cardiac dysfunction measured by echocardiography. Analysis of autophagy by LC3 Western blotting, immunohistochemistry and transmission electron microscopy indicated that Lcn2 KO mice had a greater ischemia-induced increase in autophagy versus wt mice. We then directly treated cardiomyocytes with Lcn2 and found using LC3 Western blot, tandem fluorescent RFP/GFP-LC3, DQ-BSA degradation and MagicRed assay for lysosomal cathepsin activity that Lcn2 reduced autophagic flux. Furthermore, Lcn2 reduced phosphoULK1 S555 and increased phosphoULK1 S757. Importantly, these changes correlated with increased cell death and reduced insulin sensitivity in response to Lcn2. To study the functional significance of changes in autophagy we created an autophagy-deficient cell model by overexpressing a dominant-negative Atg5 mutant. Lcn2 or autophagy deficiency both induced insulin resistance, and adding rapamycin after Lcn2 could stimulate autophagy and recover insulin sensitivity. In conclusion, our study indicated that Lcn2 attenuated autophagic flux and induced both insulin resistance and cell death in cardiomyocytes; effects which may play an important role in the pathogenesis of heart failure in obesity.

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SKELETAL MUSCLE AND PLASMA LIPIDOMIC SIGNATURES OF INSULIN RESISTANCE AND OVERWEIGHT/OBESITY IN HUMANS

Tonks KT, Coster ACF, Christopher MJ, Chaudhuri R, Chisholm DJ, Meikle PM, Greenfield JR, *Samocha-Bonet D**
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Objectives: Alterations in lipids in muscle and plasma have been documented in insulin-resistant people with obesity. Whether these lipid alterations are a reflection of insulin resistance or obesity remains unclear.

Methods: Non-diabetic sedentary individuals not treated with lipid lowering medications were studied (n=51). Subjects with BMI>25 kg/m2 (n=28) were stratified based on median glucose infusion rate (GIR) during a hyperinsulinaemic-euglycaemic clamp into insulin-sensitive and insulin-resistant groups (above and below median, obese insulin-sensitive OIS, and obese insulin-resistant OIR, respectively). Lean individuals (n=23) served as a reference group. Lipidomics was performed in muscle and plasma by liquid chromatography electrospray ionization-tandem mass spectrometry. Pathway analysis of gene array in muscle was performed in a subset (n=35).

Results: In muscle, insulin resistance was characterized by higher levels of C18:0 sphingolipids, while in plasma, higher levels of diacylglycerol and cholesterol ester, and lower levels of lysophosphatidylcholine and lysoalkylphosphatidylcholine, indicated insulin resistance, irrespective of overweight/obesity. The sphingolipid metabolism gene pathway was upregulated in muscle in insulin resistance independent of obesity. An overweight/obesity lipidomic signature was only apparent in plasma, predominated by higher triacylglycerol and lower plasmalogen species.

Conclusions: Muscle C18:0 sphingolipids may play a role in insulin resistance independent of excess adiposity in humans.

THE ROLES OF ADIPOSE TISSUE AND ADIPOKINES ON CRANIAL CRUCIATE LIGAMENT

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Obesity is one of the risk factors of cranial cruciate ligament (CCL) disease in human and dogs. Adipose tissue contains adipocytes which synthesise and release an array of chemical mediators name adipokines such as adiponectin, leptin and visfatin; these can have adverse effects on health. To date, the role of adipose tissue and adipokines in CCL rupture has not yet been clarified. In order to examine the role that adipose tissues and adipokines play in the pathogenesis of CCL disease, we determined alterations of glycosaminoglycan in ligament explants after 14 days of co-culture with infrapatellar fat and subcutaneous fat. We found that glycosaminoglycan production in ligament was reduced in the co-culture groups ($P<0.01$). Then, we assessed the effects of adipokines on CCL cells. We performed cell viability assays and qRT-PCR to examine cartilage degradation markers (MMP-13, aggrecan) gene expression in ligament cells when stimulated with different concentrations and durations of adipokines (adiponectin, leptin and visfatin). As each adipokine concentration increased, cells viability decreased by 25% ($P<0.01$). In addition, after 1 hr and 6 hr of leptin stimulation, aggrecan gene expression in CCL cells was decreased by 53% ($P=0.01$). Furthermore, we investigated the correlations between clinical data (age, weight, body condition score and severity of lameness) with cartilage degradation markers in CCL from cruciate ruptured dogs. Data indicated that leptin was negatively correlated with aggrecan ($P=0.01$) and lameness score ($P=0.02$). Whereas, visfatin was positively correlated with MMP-13 ($P=0.05$) and negatively correlated with body condition score ($P=0.02$). Therefore, our data suggest factors secreted by adipose tissue have biological effects on the cranial cruciate ligament, for instance by reducing glycosaminoglycan production, and reducing cell viability. However, further work is required so as better to understand the role of adipose tissue in cruciate ligament pathology.

Day 2:

Oral Presentation Abstracts

IMPACT OF A HEALTH PROGRAM ON PHYSIOLOGICAL INDICATORS OF OBESITY IN MEXICAN SECONDARY SCHOOLS

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Quality of life, individual and public health have suffered a progressive decrease in the last decades, noncommunicable diseases (NCDs) being a major issue in developed countries. Research in the medical and social fields has stressed the role of obesity and overweight as main causes of the increasing rates of diabetes, cardiovascular troubles, and other NCDs. Moreover, this relation is stronger when obesity appears in early ages. For this reason, professionals have centred their attention on individuals' behaviours that can prompt, or prevent, this condition. As a result, Physical Activity (PA) and nutrition acquired the role of principal agents for preventing or reducing obesity and consequently life expectancy in youth. The aim of this research was to assess the impact of a school intervention program based on PA and nutritional counselling on physiological indicators of obesity in Mexican secondary school students.

The sample was composed by 41 obese adolescents randomly distributed in experimental group (EG, 8 boys, 13 girls) and control group (CG, 13 boys, 7 girls). Obesity was assessed measuring IMC-z and waist circumference and evaluating the scores in accordance with Mexican youth reference tables. Groups homogeneity was assessed and confirmed at baseline. During six months, EG students carried out Physical Education (PE) activities based on tactical ball games (four 60-min sessions per week), and attended meetings of nutritional counselling involving their families (1 hour per week). CG participants carried out their regular school activities. Pre-post test showed that values of HDL cholesterol ($p = .039$) and triglycerides ($p < .001$) worsened at post-test in CG. In EG, triglycerides significantly decreased ($p = .008$) whereas HDL cholesterol increased ($p < .001$). No differences were found in waist circumference, blood pressure, and glycaemia values at post-test. Comparison between EG and CG showed significant differences in cholesterol ($p = .006$), triglycerides ($p = .004$), and glycaemia ($p = .018$), the former presenting healthier scores than the latter.

The outcomes of our study confirm that exercising is an important factor for improving parameters related to obesity in youth. Furthermore, school appears to be an appropriate environment for implementing health programs. However, the proposed intervention did not have any effect on waist circumference or blood pressure, as no differences between EG and CG were found at post-test. This could depend on the duration of the program, as studies confirm the need for longer periods of application if we aim to obtain structural changes in body composition; or on participants' nutritional habits, since no instruments were used to monitor their diet and assess the actual impact of the counselling sessions during the intervention.

THE SWEET DEBATE TO LOSE WEGHT (Interactive):MYTHS, FACTS & UPDATES

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THE SWEET DEBATE TO LOSE WEGHT (Interactive):
MYTHS, FACTS & UPDATES
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The sweet debate is a huge challenge confronting the entire race encompassing all continents, Islands and regions. Whether simple carbs or complex carbs, unrefined or processed foods, they all penetrate our bodies with undesirable but avoidable calories. The Glycemic Index is an indispensable tool offering wakefulness to control sugar intake and comprehend the perils of overeating. Professor Eric Sternlicht of Occidental College, Los Angeles underlines the implications of consuming unhealthy food whereas the research conducted by the Harvard School of Public Health indicates the dangers of G1 food consumption and risks that lead to type 2 diabetes, coronary heart disease and obesity. We need to be fully educated about the origins, causes and dynamics that trigger appetite leading to a vicious cycle of overtaking. Since craving for more is an undeniable reality, the sugar intake in any form is a drug addiction rather than a nutrient. The upheavals in sugar levels due to several factors associated with eating products offer us ample food for serious thought that revolves around the objectives of The Sweet Debate to Lose Weight.

The most recent research published by the British Medical Journal [details to follow in my talk] vividly portrays that men with elevated blood-sugar levels have a higher mortality rate from cardiovascular disease. We are at the crossroads whether or not to use any sweetening agents and simultaneously, how do we trim our fatty frames without overindulging. Admittedly, high GI foods do pump a massive amount of insulin into the bloodstream thus causing an overshoot. It is an accepted phenomena that "the constant blasts of insulin can actually exhaust your pancreas' ability to produce insulin putting you at risk for diabetes" says Walter Willet of the Department of Nutrition at the Harvard School of Public Health. We are equally confronted with the problem of debating which sugar to use, if any, e.g. White sugar, caster, icing, raw, brown sugar or the fructose and glucose powder. Likewise, how do we choose among the artificial sweeteners such as Aspartame, Saccharin and Stevia? Are certain kinds of sugar better or worse for us? Do we get addicted to sugar or can we really break the myth of taste and completely abandon the use to get our life back on the healthy track? Finally, what possible alternatives such as natural sweeteners can be considered appropriate for healthy living?

It is of utmost importance to evaluate the three major categories of sweeteners, the Caloric Sweeteners, the Artificial Sweeteners and the Sugar alcohols/polypols. Each of which is further classified into sub-classes for the purpose of in-depth understanding of their use, impact and implications. While considering insinuations, several misconceptions about the practicality of Honey, Maltodextrine, Trehalose, Sorbitol, Xylitol, Neohesperdine, HSH, Neotame and Saccharin come to light that necessitate productive debate, knowledge insight and sustainable solutions. If we do overcome the evils of sugar and there may be certain benefits of sugar, although According to Sternlicht, "sugar has a bad connotation attached to it" but in moderation, unrefined sugars are an important and vital part of your diet. Obviously, sugary drinks and other products cause little harm to healthy people who are particularly involved in sports or other physical endeavours. Professor John Ivy of the department of Kinesiology and health Education at the University of Texas, Austin rightly narrates that carbs taken during exercise improves endurance performance, especially if an athlete is competing for a prolonged period of time during which stores would be depleted. On the contrary, taking in sugar prior to exercising inhibits the fat-burning effects of cardio is reported by the American Journal of Physiology. However, the present study would be of considerable value in educating the health conscious people who live and eat with misapprehensions about the consumption of sugar intake and face delusions concerning the benefits of limited amount of certain sweeteners without gaining weight, remaining fit and leading healthy lives.

This will be an interactive presentation inviting the honourable audience to have a fruitful dialogue and inspire creative discussion leading to an entertaining and educational resolution of The Sweet Debate to Loose Weight.

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EATING BEHAVIOURS AND PREDICTING WEIGHT LOSS IN CARDIAC REHABILITATION PATIENTS

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Introduction
The prevalence of overweight and obesity is increasing globally and is an acknowledged risk factor for coronary artery disease. Eating behaviours such as emotional eating and cognitive restraint (the self-initiated intent to limit food intake) have more recently been cited as determinants of weight loss. Such behaviours may guide development of successful weight loss strategies but their predictive value in cardiac rehabilitation patients is unknown.

Objectives
To evaluate potential predictors of fat loss (including eating behaviours) in cardiac rehabilitation patients.

Methods
A sample of 376 consecutively admitted cardiac rehabilitation outpatients (Mean age: 60.2yrs SD 11.2; 22.1% female) were recruited to this study. They completed the Revised Three-Factor Eating Questionnaire (TFEQ-R18), Hospital Anxiety and Depression Questionnaire (HADS) and 6 Minute Walk Test (6MWT), and were weighed using Body Composition scales. Body Mass Index (BMI: Kg/m2) was calculated for all subjects. All measures were completed on admission to and discharge from a 6 week outpatient cardiac rehabilitation program.

Results
One hundred and eighty-seven subjects (50% of the sample) lost body fat from admission to discharge, with a mean loss of 2.2kg fat (SD 3.6). Both reduction in fat mass, and percentage fat loss, from admission to discharge, were associated with significantly greater levels of cognitively restrained eating. Subjects who lost fat had significantly higher cognitive restraint scores compared with those who lost no fat/gained fat ($p < .01$). Fat loss was not associated with overeating or emotional eating behaviours, nor with exercise capacity, sex, age, anxiety, or depression.

Obese subjects (BMI ≥ 30 Kg/m2), who made up 32% of the sample, had significantly higher levels of overeating ($p < .01$) and emotional eating behaviours ($p < .01$) compared with the non-obese group. There was no difference between the two groups in terms of cognitive restraint at admission.

Women (22% of the sample) also had significantly higher levels of emotional eating behaviour compared with men.

Conclusion
Cognitive restraint was the only significant predictor of fat mass loss and percentage fat loss in cardiac rehabilitation patients. Weight loss strategies that increase overweight cardiac patients' ability to employ cognitive restraint may result in greater weight loss and prevent weight gain in this group.

FACTORS RELATING TO MOTIVATION TO CHANGE BEHAVIOURS WHO ARE OVERWEIGHT

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Background:
Obesity is an emerging healthcare epidemic affecting virtually all age and socio-economic groups and is one of the most serious and prevalent diseases of the 21st century. The increasing prevalence of obesity has created a social perception that overweight body sizes are healthy and normal. This normalisation of obesity within our society and the acceptance of higher body weights have led to individuals being unaware of the reality of their weight status and gravity of this situation thus impeding recognition of obesity. Given the escalating global health problem of obesity and its co-morbidities, the need to re-appraise its management is more compelling than ever. It is widely accepted that the causes of obesity are complex and multi-factorial. Engagement of individuals in weight management programmes is difficult if they do not perceive they have a problem with their weight. Recognition of the problem is a key component of obesity management and identifying the main predictors of behaviour is key to designing health behaviour interventions.

Aim:
The aim of the research was to determine factors relating to motivation to change behaviours in individuals who perceive themselves to be overweight.

Method:
The research design was quantitative, correlational and cross-sectional. The design was guided by the Health Belief Model. Data were collected online using a multi-section and multi-item questionnaire, developed from a review of the theoretical and empirical research. A sample of 202 men and women who perceived themselves to be overweight participated in the research.

Findings:
Perceived barriers to weight loss and perceived benefits of weight loss were significant predictors of motivation to change behaviour. The perceived barriers to weight loss which were significant were psychological barriers to weight loss (p =<0.019) and environmental barriers to physical activity (p=<0.032).The greatest predictor of motivation to change behaviour was the perceived benefits of weight loss (p<0.001). Perceived susceptibility to obesity and perceived severity of obesity did not emerge as significant predictors in this model. Total variance explained by the model was 33.5%.

Conclusion:
Perceived barriers to weight loss and perceived benefits of weight loss are important determinants of motivation to change behaviour. These findings have important implications for health professionals to help inform their practice and for the development of intervention programmes to prevent and control obesity.

ASSOCIATION OF COMMON POLYMORPHISMS OF THE LIPOPROTEIN LIPASE AND PON1 GENES WITH THE METABOLIC SYNDROME IN A SAMPLE OF COMMUNITY PARTICIPANTS

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Purpose and method: A cross-sectional study was performed in order to determine the possible contribution of PON1 and LPL polymorphisms for the risk of the metabolic syndrome (MetS) in 817 participants of South African Asian Indian ancestry. Demographic and anthropometric data was collected, as well as fasting blood for analysis of glycaemic and lipid parameters. DNA was isolated from peripheral blood and allelic polymorphisms at positions Q192R, L55M in the PON1 gene and S447X and N291S in the LPL gene were studied using real-time polymerase Chain reaction (PCR- Roche LightCycler 480 System), and Melting Curve analysis was used to identify homozygotes and heterozygotes. The MetS was classified using the harmonised criteria.

Results: The prevalence of the MetS was 47.99%, with the main drivers being the increased waist circumference (96.6%), raised blood pressure (76.8%) and raised triglyceride levels (72.4%). There was no significant difference (p=n/s) in the distribution of the genotypes as well as their alleles in subjects with and without MetS. Increased levels of triglycerides was found in subjects with the MetS who had the QQ (p= 0.007; OR=1.19; 95%CI =1.04; 1.36) and QR (p= 0.018; OR=1.73; 95% CI= 1.12; 2.67) genotypes of the Q192R polymorphisms. Subjects who had both the SX genotype (S447X polymorphism) and the LM genotype (L55M polymorphism) were more likely to have the MetS than those without (p = 0.016; OR 2.19; 95% CI: 1.17, 4.06). There was no predisposition to MetS in smokers for the all the polymorphisms studied.

Conclusion: The absence of clear-cut associations between the polymorphisms studied and the MetS suggests that the MetS in this population may not be due to genetic factors, but more to environmental factors, contributing to obesity-related MetS.

Day 3:

Oral Presentation Abstracts

Oral presentations will be added after the submission deadline

MARESIN 1 IMPROVES INSULIN SENSITIVITY IN OBESE-DIABETIC OB/OB MICE

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Introduction: Obesity has emerged as a growing global health problem associated to multiple diseases including type 2 diabetes. There is consistent evidence of the beneficial actions of n-3 PUFAs on obesity-induced insulin sensitivity ascribed in part to the synthesis of pro-resolving lipid mediators derived from these fatty acids (i.e. resolvins, protectins and maresins). However, the role of Maresin 1 (MaR1) on obesity-associated insulin resistance has not been yet explored.

Objective: The aim of this study was to examine the effects of MaR1 on insulin sensitivity in a genetic model of obesity (ob/ob mice) and to examine the potential molecular mechanisms involved.

Material and Methods: Male ob/ob mice were divided into two groups (n=7) receiving either saline or MaR1 (2 µg/kg) by i.p. injection during 20 days. An insulin tolerance test (ITT) was performed at day 19. Levels of total and phosphorylated Akt and AMPK were examined in white adipose tissue (WAT) by western blot. Adiponectin mRNA expression was assayed by RT-PCR.

Results: MaR1 had insulin sensitizing properties at a functional level improving the insulin tolerance test compared to untreated-ob/ob mice. This result was accompanied by an increased phosphorylation of Akt and AMPK in WAT. Moreover, MaR1 administration also upregulated the expression of the insulin-sensitizing adipokine adiponectin in WAT.

Conclusions: Altogether these data suggest insulin-sensitizing properties for MaR1 in obesity, which could be related to the upregulation of adiponectin and the activation of AMPK.

Poster Presentation Abstracts

Poster abstracts will be finalised weeks before the event

THE OVERWEIGHT CHALLENGE AND PERCEPTIONS OF WEIGHT

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Background:
Obesity is the most important health challenge faced at a global level and represents a rapidly growing problem to the health of populations. The increasing prevalence of obesity has created a social perception that overweight body sizes are healthy and normal. This normalisation of obesity within our society and the acceptance of higher body weights have led to individuals being unaware of the reality of their weight status and gravity of this situation thus impeding recognition of obesity.

Aim:
The aim of the research was to determine factors relating to motivation to change in overweight/obese individuals.

Methodology:
A quantitative, cross-sectional, descriptive study was undertaken. A sample of 202 men and women participated in the study. Data were collected using an online questionnaire. Ethical approval was obtained for the study.

Findings:
Results indicated a significant discrepancy between individual's perceptions of their body weight and their BMI-determined weight category. The findings showed that the majority of respondents (81%) accurately perceived themselves to be overweight. Weight misperception was found in those who were obese with only 17% of respondents who were obese perceiving themselves to be obese. Over 60% of obese participants perceived themselves to be overweight and 21% perceived themselves to be very overweight. In contrast, most overweight respondents correctly perceived themselves to be overweight. The study results clearly show that the largest misperception was found in those who were obese.

Conclusion:
The findings in this study offer insight into the need to examine the role of body weight perception in weight management strategies. Weight misperceptions are potentially modifiable, therefore public health strategies that promote physical activity and healthy eating behaviours need to focus on overcoming weight misperception. Greater routine monitoring and interpretation of body weight is required and could present an important step in managing the obesity epidemic.

INVESTIGATION OF METABOLISM OF EXOGENOUS GLUCOSE AT THE EARLY STAGE AND ONSET OF DIABETES MELLITUS IN OTSUKA LONG-EVANS TOKUSHIMA FATTY RATS USING [1, 2, 3-13C] GLUCOSE BREATH TESTS

Urita Y, Kawagoe N, Kijima S, Tanaka H, Suzuki K, Saito T, Yamada A, KomatsuF, Kumade E, Takemoto I, Sasaki Y, Maeda T, Ishii T, Watanabe T, Miyazaki T, Zai H, Nakajima H.

It is difficult to determine which process of glucose metabolism is impaired in diabetic and prediabetic patients. The aim of this study was to evaluate the changes in glucose metabolism at the early stage and onset of diabetes mellitus in Otsuka Long-Evans Tokushima Fatty (OLETF) rats by measuring 13CO2 values in the exhaled air, which most likely were come from pyruvate decarboxylation, tricarboxylic acid (TCA), and pentose phosphate pathways (PPP) after oral administration of [1, 2, 3-13C]glucose. Eight OLETF rats and the control; eight Long-Evans Tokushima Otsuka (LETO) rats were administered 13C-glucose (100 mg/kg). The three types of 13C-glucose breath tests were performed thrice in each period, i.e., 6–12 weeks, 15–18 weeks, and 21–24 weeks after birth at one-week intervals. The 13CO2 concentration was measured and was expressed as delta per mil, and a breath 13CO2 excretion curve was obtained. The increases in 13CO2 excretion were delayed ain OLETF rats in all types of breath tests. This suggests that OLETFs had lower glucose metabolism than control rats, and overall glucose metabolism is enhanced with age in both

types of rats. Utilization of [2-13C]glucose was suppressed ages 6-12 weeks, and 3-13C glucose oxidation is increased in OLETF rats vs. LETO rats ages 22-25 weeks. For the [1-13C]glucose breath test, no significant differences in area under the curve until 180 min were observed between OLETF and control rats at any age. Glucose metabolism kinetics showed differences between the age groups and two types of rats but overall AUC180 of 1-13C glucose did not differ significantly. We conclude that breath CO2 excretion is reduced in OLETF rats in the primary stage of prediabetes, suggesting that glucose oxidation kinetics are changed between OLETF vs. LETO rats.

AMINO ACID CHANGES DURING TRANSITION TO A VEGAN DIET SUPPLEMENTED WITH FISH IN HEALTHY HUMANS

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ABSTRACT
Purpose: To explore whether changing dietary protein sources towards a healthier pattern can lower plasma branched chain (BCAAs), aromatic and sulfur (SAAs) amino acids that are linked to obesity and diabetes.

Methods: 36 subjects (mean age 31±2 y) underwent a voluntary abstinence from meat, poultry, eggs and dairy products for 6 weeks, while enriching the diet with fish, in fulfillment of a religious fast. Subjects were assessed one week before the fast (V1), 1 week after initiation of the fast (V2) and in the last week of the fast (V3). 34 subjects completed all 3 visits.

Results: Plasma BCAAs decreased at V2, and remained low at V3 (P<0.001 for all). Valine showed the greatest decline, by 20% and 19% at V2 and V3 respectively. Phenylalanine and tryptophan, but not tyrosine, decreased at V2 and V3. The 2 proteinogenic SAAs, methionine and cysteine remained stable, but the cysteine product, taurine, decreased from 92±7 µmol/L to 66 ±6 (V2; P=0.003) and 65±6 µmol/L (V3; P=0.003). A progressive decline in plasma glutamic acid, coupled with an increase in glutamine was observed. Plasma total- and LDL-cholesterol decreased at V2 and V3 (P <0.001 for all).

Conclusions: Changing dietary protein sources towards a more “healthy” pattern in an ad libitum setting lowers plasma BCAAs that are linked to diabetes risk, and improves cholesterolemia. Our findings suggest that BCAA elevation is a marker for dietary patterns that are associated with diabetes and obesity, and that plasma BCAA profile is amenable to dietary modification in humans.

AMINO ACID CHANGES DURING SHORT-TERM OVERFEEDING IN HEALTHY HUMANS

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ABSTRACT
Background: Several amino acids, including branched chain amino acids (BCAA) and the sulfur amino acid (SAA) cysteine are associated with human obesity and insulin resistance, but the effect of short-term overfeeding on these amino acids is not known.

Objective: To investigate the effect of 28-day overfeeding on serum amino acid and total glutathione (tGSH) concentrations.

Design: Forty healthy adults were overfed by 1,250 kcal per day for 28 days. Body composition (dual-energy X-ray absorptiometry) was assessed at baseline and day 28 (D28). Serum amino acids and tGSH were measured at baseline, D3, and D28 by mass spectrometry. Linear mixed-effects models were used to evaluate the effect of time in the total group and separately in those with low vs high fat gain at D28 (median split).

Results: Plasma concentrations of the BCAA valine and isoleucine increased at D3 (by 17% and 22% respectively, $P \leq 0.002$) and remained elevated at D28 (by 9% each, both $P<0.001$ both). Glutamine, tyrosine and tGSH also increased at D3, but declined by D28. A drop in plasma phenylalanine and serine was observed D3 ($P<0.001$), but only serine remained low at D28. Three amino acids were not changed in the total group, but showed a transient increase at D3 only in high-fat gainers (Pinteraction <0.05): total cysteine, proline and tryptophan. Overfeeding did not alter serum arginine, leucine, ornithine or the SAA methionine, cystathionine and taurine.

Conclusion: Overfeeding in humans produced rapid and sustained elevations in BCAA concentrations, while SAA were less responsive to overfeeding. Our data highlights the potential role of diet in contributing to plasma BCAA elevation in obesity.

PROTEIN CONSUMPTION AND REQUIREMENTS FOR RESISTANCE TRAINING IN KUWAITI MALE BODYBUILDERS: AN ASSESSMENT OF DIETARY SUPPLEMENTATION

Resistance exercise is performed to increase muscle strength, support maximal muscle growth, bone strength and boost metabolism. Resistance training accompanied with consumption of high amounts of dietary protein reduces the rate of muscle protein breakdown and increases lean muscle mass.

The timing, amount and type of (dietary and supplement) protein consumption are significant for complete benefits for resistance training. Bodybuilders consume supplementary protein in addition to the daily dietary protein in order to increase muscle mass and volume. The excessive protein intake may be related to the lack of available health and nutrition information provided to bodybuilders. Thus, the purpose of this study was to investigate further details of excess protein consumption and actual protein intake in male recreational bodybuilders recruited from physical education department in the state of Kuwait. This would include assessment of the type of protein intake, timing of protein intake with respect to training, and the methods of ingestion. In addition, we will compare the results with the protein allowance recommended by Academic Societies and Health Agencies. Forty one questions were asked to reveal the subjects demographics and knowledge of training and supplementary protein consumption. Also, a 24 hour dietary recall was used to determine the daily consumption of protein.

The result of the 19 recreational collegiate bodybuilders surveyed suggested that dietary protein consumed daily without supplement was (118.6 ±52.1g/d or 1.47g/kg bw/d) and with supplement was (148.6 g/d or 1.77g/kg bw/d) where statically significant in comparison with normal subject's daily allowances recommended by RDA (56g/d or 0.8g/kg bw/d). However, 73% of the subjects lack the knowledge of the recommended daily protein intake and 58% did not know the extra consumption of supplementary protein. In spite of that, the timing; the type and the amount consumed daily were acceptable.

This information would allow further assessment of the dietary choices of male Kuwaiti collegiate bodybuilders with respect to protein consumption and would provide information for potential intervention through health and nutrition education. It is important to conduct a detailed nutrition assessment specific to bodybuilders training gaols before recommending protein supplements.

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IMPACT OF DIETARY PATTERNS ON OBESITY IN THE UNITED STATES

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PURPOSE:
Dietary habits contributing to obesity are not sufficiently understood. The aim of this study was to explore dietary patterns in the United States population and their association with obesity using a nationally representative dataset.

METHODS:
A total of 7798 individuals (aged ≥6 years, 3873 men and 3925 women) who participated in the National Health Nutrition and Examination Survey (NHANES) between 2009-2010 were studied. Participants were categorized into three dietary patterns: vegetarian, gluten-free diet (GFD), and traditional (no dietary restriction). In an effort to further define these patterns, we used the diet behavior and nutrition questionnaire (DBQ915: "Do you consider yourself to be a vegetarian?") to categorize vegetarians. For those in the GFD group, the medical condition questionnaire (MCQ086:"Are you on a gluten-free diet?") was utilized. Dietary patterns were analyzed according to demographic data (age, sex, and race) and body measurements (BMI and waist circumference). For all analyses, we used published weights to account for oversampling and nonparticipation in the household interview and physical examination. Analyses were performed utilizing R software version 3.2.2.

RESULTS:
In NHANES 2009-2010, there were 178 vegetarians (weighted prevalence: 2.5% [95% CI, 2.0-3.0]), 55 people on GFD (weighted prevalence: 0.6% [95% CI, 0.3-0.9]), and 7564 people on a traditional diet (weighted prevalence: 96.9% [95%CI, 96.3-97.5]). People on a GFD were found to be older (48.3 yrs [95% CI,44.9-51.8]) compared to those on a traditional diet (38.8 yrs [95% CI,38.7-38.9],p-value <0.001) as well as a vegetarian diet (37.7 yrs [95% CI,34.3-41.1],p-value <0.001). More females were found to consume a vegetarian diet (67.6%[95% CI, 60.3-74.8], p-value <0.01) and GFD (63.2%[95% CI, 49.4-77.0], p-value 0.11) compared to a traditional diet (50.4%[95% CI, 49.2-51.7]). Amongst the black population, there was a significantly lower proportion of vegetarians (5.1%[95% CI, 2.3-8.0]) compared to those on a traditional diet (11.5%[95% CI, 8.2-43.7]). However, in the other race group that includes Asian and other multi-racial populations, the vegetarian diet was more prevalent (25.9%[95% CI, 8.2- 43.7]) than those who consumed a traditional diet (6.7[95% CI, 4.9-8.4]). When comparing the body measurements of participants who consume a traditional diet (27.2[95% CI, 27.0-27.4]), vegetarians (24.6[95% CI, 23.7-25.6], p-value <0.001) and those on a GFD (25.8[95% CI, 24.2-27.4], p-value 0.10) had significantly lower BMI values. Likewise, people on a vegetarian diet (86.6cm [95% CI, 83.5-89.7]) and GFD (88.4cm[95% CI, 83.8-93.1]) showed smaller waist circumferences than those on a traditional diet (92.9cm[95% CI,[92.4-93.5]).

CONCLUSION:
Within the United States population, those who adopted a vegetarian dietary pattern showed a lower BMI as well as a lower waist circumference. Despite borderline p-values, a GFD was also associated with decreased rates of obesity. Further studies are warranted to explore causal relationship between dietary patterns and obesity.

EFFECT OF LAPAROSCOPIC SLEEVE GASTRECTMY ON NONALCOHOLIC STEATOHEPATITIS IN JAPANESE PATIENTS WITH SEVERE OBESITY

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Background: Severe obesity has become a worldwide epidemic, bringing with it a multitude of metabolic abnormalities including nonalcoholic fatty liver disease. Treatment options of nonalcoholic steatohepatitis (NASH) are still under investigation. The aim of the present study was to evaluate the effect of laparoscopic sleeve gastrectomy (LSG) on NASH.

Methods: Sixty-one Japanese patients with severe obesity underwent LSG and concomitant intra-operative liver biopsies from June 2008 to December 2015. The Brunt classification system was used to grade liver biopsies for the presence and severity of steatosis, inflammation, and fibrosis. Clinical and laboratory data were collected from prospective database.

Results: Fourteen patients fulfilled criteria for NASH and 6 patients underwent repeat percutaneous liver biopsy at 12 months after LSG. The mean excess body weight loss at time of repeat biopsy was 41.2%. Steatosis and lobular inflammation improved in 6 patients. Ballooning generation improved in 4 patients. None of the repeat biopsies revealed progression of grade or stage of NASH. Fibrosis improved in 5 patients, with resolution in 1. Significant differences were observed in the following variables pre- and post-LSG: Mean BMI (40.1 vs 32.7 kg/m2, $p<0.001$), HbA1c (8.1 vs 5.6%, $p=0.003$), HOMA-IR 12.4 vs 2.6, $p=0.029$), malondialdehyde modified-LDL (181.5 vs 112.8 U/L. $p=0.012$), plasminogen activator inhibitor-1 (60.7 vs 21.8 ng/mL, $p=0.019$), high-sensitivity C-reactive protein (6,895 vs 1,297, $p=0.049$), liver volume (2,483 vs 1,707 ml, $p=0.041$), visceral adipose tissue (317 vs 168 cm2, $p<0.001$).

Conclusion: LSG is associated with a significant improvement in both histological and biochemical markers of NASH. Surgery-induced weight loss should be considered as a treatment of choice for NASH patients with severe obesity.

HEAT SHOCK PROTEIN 72 IMPROVES INSULIN SENSITIVITY BY DECREASING LIPID ACCUMULATION IN SKELETAL MUSCLE

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Insulin resistance is a condition in which cells fail to properly respond to insulin and is associated with many health-related complications, including type 2 diabetes and heart disease. Recently it was shown that expression of the heat shock protein 72 (Hsp72), cytoprotective chaperone protein, in skeletal muscle is positively correlated with insulin sensitivity and inversely correlated with the body fat percentage in humans. Moreover, it was observed that increased level of Hsp72 in muscle can protect against obesity-induced insulin resistance, but the underlying molecular mechanisms remain poorly understood. Therefore, the aim of the present study was to investigate the molecular mechanisms involved in Hsp72-associated regulation of insulin sensitivity in skeletal muscle, and to define the roles of Hsp72 domains in their effect on insulin signaling.

Herein we show that overexpression of Hsp72 decreases palmitic acid-induced insulin resistance and accumulation of various lipid species, such as triglycerides, free fatty acids, diglycerides and ceramides in C2C12 cells. Additionally, myotubes overexpressing Hsp72 are characterized by upregulation of 5'AMP-activated protein kinase (AMPK), as well as increased expression of peroxisome proliferator-activated receptor α (PPARα). Inhibition of AMPK with compound C attenuated the Hsp72-induced improvement in insulin sensitivity in C2C12 cells. Moreover activity ratio of malate dehydrogenase and lactate dehydrogenase was significantly increased in myotubes with overexpression of Hsp72. We also observed that overexpression of Hsp72 with point mutation in ATP binding domain (Hsp72 K71E) does not affect insulin sensitivity nor lipid accumulation in C2C12 myotubes, but AMPK in these cells was significantly downregulated. Interestingly Hsp72 without C-terminal EEVD motif (Hsp72 ΔEEVD) increases insulin sensitivity, decreases lipid content and also upregulates AMPK in C2C12 cells.

Overall, this study showed that Hsp72 decreases lipid accumulation and improves insulin sensitivity via upregulation of AMPK pathway in C2C12 cells. Our results suggest that physiological effect of Hsp72 on insulin sensitivity and lipid metabolism can be caused by increased oxidative capacity in cells with overexpression of Hsp72. Furthermore, active ATPase domain in Hsp72 is required to increase insulin sensitivity and AMPK phosphorylation in myotubes, while C-terminal EEVD domain of Hsp72 is dispensable for its action on insulin signaling.
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DOES PRE-OPERATIVE WEIGHT LOSS PREDICT POST-OPERATIVE WEIGHT LOSS IN PATIENTS UNDERGOING LAPAROSCOPIC ADJUSTABLE GASTRIC BANDING AND ROUX-EN-Y GASTRIC BYPASS?

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Background: Bariatric surgery is an intervention for the treatment of obesity in the UK among patients with a BMI >40kg/m2 or a BMI >35kg/m2 with co-morbidities. Bariatric centres recommend a 5-10% weight loss target prior to surgery. It is un-clear whether pre-operative weight loss is predictive of weight loss post-operatively following LAGB or RYGB.

Objectives: To evaluate whether pre-operative weight loss is a predictive factor of post-operative weight loss in LAGB and RYGB patients
Method: A quantitative, retrospective study was undertaken. The sample included LAGB (n=160) and RYGB (n=106) patients who underwent surgery at a single bariatric unit between 2012 and 2013. Weight measures were taken during routine care at baseline and at follow-up appointments. Data analysis included orrelation and regression inferential statistics.

Results: Pre-operative weight loss was correlated with post-operative weight loss in LAGB patients at 12 months and 24 months ($p = <0.01$) but not in RYGB patients. Pre-operative weight loss was not a significant predictor of post-operative weight loss in LAGB patients but was a negative significant predictor of 24 month post-operative weight loss in RYGB patients ($p = <0.01$).

Conclusions: Pre-operative weight loss is not positive predictor of post-operative weight loss in RYGB or LAGB patients. Unsatisfactory weight loss results pre-operatively should not be used to predict the ultimate outcome of bariatric surgery.

COMPANION ANIMAL OBESITY AS A MODEL FOR CHILDHOOD OBESITY

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In both companion animals, as well as in childeren under the age of 6 largely depend on their parents for their food intake. Several risk factors for obesity are know and shared between pets and people (i.e. (epi)genetics, being fed too much food, high pleasure foods, lower socio-economic status of the parents, overweight parents). Companion animals can therefore be seen as ideal models for childhood obesity. Development of new strategies for obesity management can be studied in pets, before being applied to children. This poster will sum up similarities between pet obesity and childhood obesity and will provide insights on treatment options, focussing primarily on psychosocial aspects.

LIPID METABOLISM IN HYPOTHYROID HEART – THE ROLE OF STEAROYL-COA DESATURASE 1

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Thyroid hormone (TH) plays an important role in the regulation of cardiac metabolism and function through thyroid receptors (TR). Lack of thyroid hormones (hypothyroidism) has unfavorable effect on the lipid profile and is usually correlated with elevated level of lipids. One of the main enzyme in the lipid metabolism is stearoyl-CoA desaturase 1 (SCD1) which catalyzes synthesis of monounsaturated fatty acids. Studies on mouse strains that have a mutation in the SCD1 gene have evidenced that SCD1 is an important control point in lipid metabolism and body weight regulation. It is known, that mice with targeted disruption in the SCD1 gene have increased energy expenditure, reduced body adiposity, increased insulin sensitivity and are resistant to diet-induced obesity. Moreover, TH regulates SCD1 gene expression by interacting with SCD1 gene promoter, and affects expression of genes involved in lipid synthesis (i.e. fatty acid synthase, sterol regulatory element-binding protein-1c (SREBP-1c)) or fatty acids oxidation (i.e. peroxisome proliferator-activated receptor-α (PPARα)). TR interact with PPARα by sharing binding sites and partners like retinoid X receptor (RXR). Furthermore, TR are able to repress β-oxidation genes by sequestering RXR away from PPAR-RXR. Latest results show that TR and PPARα can interact in regulation of cardiac lipid metabolism, although data identifying cross-talk between TR-PPAR-SCD1 are yet inconsistent.

The aim of the presented study was to determine whether SCD1 is involved in thyroid hormone action on lipid and glucose metabolism in the heart in hypothyroidism. Our study showed that SCD1 deficient mice are characterized by elevated triiodothyronine (T3) plasma concentration, whereas thyroid stimulating hormone (TSH) and thyroxine (T4) concentrations were reduced when compared with SCD1+/+ mice. Moreover, TRβ protein and mRNA levels were higher, whereas TRα protein and mRNA levels were lower in the heart of SCD1-/- mice compared with SCD1+/+ controls. Brown adipose tissue mass and heart to body ratio were decreased, whereas visceral fat to body weight ratio was raised in both SCD1-/- and SCD1+/+ mice in hypothyroidism. Interestingly, SCD1 ablation leads to triglyceride accumulation in liver, adipose tissue and heart of hypothyroid mice. In SCD1+/+ mice, hypothyroidism increased SREBP-1 protein level indicating elevated lipogenesis. PPARα protein level and extent of AMPK phosphorylation were decreased suggesting drop in fatty acid oxidation. Furthermore, the level of Akt phosphorylation was elevated suggesting increased glucose utilization. SCD1 ablation caused opposite effects leading to increased fatty acids oxidation and decreased lipogenesis and glucose utilization. Taken together, these results indicate that SCD1 is an important element of response to TH action in the heart.

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VALIDITY AND RELIABILITY OF KOREAN VERSION OF THE YALE FOOD ADDICTION SCALE(YFAS)

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Purpose: This study aimed to examine the validity and reliability of Korean version of Yale Food Addiction Scale(YFAS).

Method: The data using survey was collected from 148 of students who were randomly participated in this study. Internal consistency reliability and construct validity were analyzed by SPSS Statistics 18.0 and AMOS 19 program.

Result: Korean version of YFAS was categorized into 6 factors(Living failure, Loss of control, Problem recognition, Withdrawal, Social isolation, Immunity) explaining 64.6% of the total variance. The model of 6 subscales was validated by confirmatory factor analysis(CFI=.966, NFI=.926, TLI=.921, RMSEA=.069). Cronbach's alpha coefficient for 23 items was .67~.81. In addition, Korean YFAS showed significant levels of construct validity and reliability.

Conclusion: Thus, these data supported that Korean YFAS might be reasonable tool to measure the food addiction of Korean university student.

THE EFFECT OF POWER WALKING EXERCISE ON BODY MASS INDEX AND POSITIVE AND NEGATIVE SYMPTOMS IN PATIENTS WITH SCHIZOPHRENIA

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Purpose: This study was designed to evaluate the effects of power walking exercise on Body Mass Index(BMI) and Positive and Negative Symptoms in inpatients with schizophrenia.

Method: The study was conducted at the mental hospital in Korea. Sixty schizophrenic patients were allocated into intervention group (n= 30) and control group (n=30). Intervention group received routine care and power walking exercise 3 times a week for 8 weeks whereas control group received only routine care. Data were analyzed by descriptive statistics, χ^2_test, and independent t-test using SPSS/WIN 11.0 version.

Result: Hypothesis I, "the BMI of the intervention group will be lower than that of control" was supported(t=-6.845, p=.000). Hypothesis II, "the scores of positive and negative symptoms of the intervention group will be lower than those of the control" was rejected(t=-1.418. p=.161). However, the total score of PANSS in intervention were tend to lower than that of the control.

Conclusion: Results of the study showed that power walking exercise was effective for the reduction of BMI but did not show statistically significant improvement in PANSS. Further study may be necessary to determine the long term effects of the current power walking exercise.

EFFECT OF WEIGHT CONTROL PROGRAM FOR PSYCHIATRIC INPATIENT ON ATYPICAL ANTIPSYCHOTICS

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Purpose: The purpose of this study is to develop the weight control program for the psychiatric inpatients gained their weight on atypical antipsychotics. It was adopted and the effect of its nursing intervention was measured.

Method: The subjects of this study were 10 inpatients of experimental group and 15 inpatients of control group at Y University Medical Center in Korea. The data were analyzed by descriptive statistics, Wilcoxon Rank-Sum test and Mann- Whitney test using SPSS/WIN 10.0 program.

Result: This weight control program which consists of diet therapy, exercise, and behavior modification was educated to experimental group in advance. The effect of weight control program were measured by weight change every week. The results were as follows; Hypothesis I such as "The experimental group received weight control program will lose or retain weight at least" was supported(Z=-2.820, P=.005). Hypothesis II such as "The control group who did not receive weight control program will gain the weight" was supported(Z=-3.299, P=.001).

Conclusion: From the above results, it was concluded that weight control program would be used as effective nursing intervention for weight gained inpatients on atypical antipsychotics. It would also a contribution to preventing recurrence by improving compliance of long-term neuroleptic medication.

THE ROLE OF COPING, BINGE-EATING, AND FOOD ADDICTION SYMPTOMS IN WEIGHT-LOSS TREATMENT ATTRITION

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Introduction: More than 50% of patients drop-out from weight loss treatment. The identification of factors that put an individual at high risk of attrition is important to inform strategies aimed at increasing retention rates in treatment.
Methods: N=298 participants (F=242, M=56) pursuing one of three weight-loss treatments were recruited. Programs included a high intensity low calorie diet (Optifast©), low intensity lifestyle modification program (Risk Reduction: RR), and a high intensity low carb diet. The following baseline variables were tested for ability to predict drop-out from treatment at 3 months: psychological eating motives (Social, Coping, Enhancement, Reward), binge-eating symptoms, food addiction symptoms, and program type. Data was analysed using a logistic regression, while controlling for age, sex, and ethnicity.
Results: Due to program type significantly increasing the odds of drop-out from treatment ($p<0.001$), a separate logistic regression was tested for each program type. Patients with high binge-eating symptoms were nearly 10% more likely to drop-out from low intensity lifestyle modification (N=166, $p<0.05$). Patients with high motivation to use food as a means to cope were nearly 4.5X more likely to drop out of a high intensity, low calorie, diet intervention (N=67, $p<0.05$). Similarly, patients with high coping motives were 6X as likely to drop-out from high intensity, low carb, intervention (N=65, $p<0.05$).
Conclusions: Binge-eating only seems to pose risk for treatment drop-out when not appropriately addressed by a high intensity intervention plan. High motivation to use food as a means to cope can pose a barrier to treatment for individuals in high intensity intervention programs and should be addressed as part of the behavioural treatment program.

USE OF TDCS TO REDUCE FOOD CRAVING, FOOD INTAKE, AND BINGE URGES FOR OBESITY PATIENTS WITH BED

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Introduction: This study investigated the effects of a single administration of real and sham transcranial direct current stimulation (tDCS) on food craving, in-lab food intake, and desire to binge-eat in individuals with binge eating disorder (BED) and sub-threshold BED (sub-BED). Potential mechanisms of suppressive effects on food craving and food intake were also explored.

Methods: 30 participants (F=20, M=10) with BED (N=19) or sub-BED (N=11) were recruited. Participants were administered both a sham and a real session of tDCS, where current intensity was 2 mA for twenty minutes. The anode was placed over the right dorsolateral prefrontal cortex (DLPFC) and cathode over the left DLPFC. Total calories eaten from three foods offered in-lab (Oreo cookies, M&M's, and potato chips) were calculated. Food cravings in response to food images were assessed pre-post tDCS (Likert scale), and participants' rated their desire to binge-eat (Likert scale) later that evening. This was a repeated measures design, where all analyses report within subject differences across the real vs. sham session.

Results: tDCS significantly decreased food intake ($F(1, 29) = 4.35$, $p = 0.046$; partial eta squared = 0.13) with the greatest suppression on the preferred food ($F(1,29) = 5.35$, $p = 0.03$, partial eta squared = 0.16). Males had greater reduction in overall food craving ($F(1,28) = 4.09$, $p = 0.05$, partial eta squared= 0.13), dessert craving ($F(1,28) = 4.99$, $p = 0.03$, partial eta squared = 0.15), and marginally greater reduction for carbohydrate craving ($F(1,28) = 3.79$, $p = 0.06$, partial eta squared = 0.12). tDCS decreased desire to binge-eat only in males ($F(1,28) = 4.77$, $p = 0.04$, partial eta squared = 0.19). Increased intent to restrict food intake significantly predicted greater reduction in food intake by tDCS (Beta = -0.39, $p = 0.048$, $R2 = 0.19$, Cohen's $f2 = 0.23$). There was no correlation between suppression of food intake and suppression of food craving (p = n.s.).

Conclusions: Multiple tDCS session-induced neuroplasticity may hold promise as a safe and longer-lasting treatment adjunct for BED, particularly for males with BED. Right DLPFC anode placement suggests enhanced cognitive control as a functional mechanism for the anti-binge effects of tDCS.

REDUCING THE RISK OF OBESITY IN SAUDI ARABIA

Introduction

Obesity has become a major public health problem in Saudi Arabia leading to a health and social-economic burden. There is immediate need to seek strategy for prevention. In a conference held in Bahrain in 2010, a strategy was proposed to promote physical activity in Arab countries. This proposal provides useful plan of action to control and prevent obesity.

Problem Statement

Obesity is a worldwide epidemic. The World Health Organization (WHO) has warned of increased rate of prevalence. In Middle East, obesity is an important risk factor for communicable diseases. This study attempts to expand current understanding of the various risk factors as they relate to the risk of obesity.

Purpose of the Study

The purpose of this study is to establish the various strategies that can be used to control obesity in Saudi Arabia.

Research Objectives

This study will be guided by the following research objectives:

i. To ascertain the effect of obesity on the performance on Saudi's population.
ii. To determine degree of obesity prevalence in Saudi Arabia.

Research Hypothesis

The study will be guided by the following research hypotheses:

H01: There is significant relationship between obesity and the lifestyle in Saudi Arabia.

Significance of Research

The study will add value to theory by forming a basis upon which further research on issues of obesity shall be undertaken by academicians. The study will be an important tool to the government, health institutions and public to strategically embrace themselves towards improving their health status.

Literature Review

This chapter will review the related literature on obesity and organizations in terms of prevalence, control, prevention and finally the knowledge gaps. Chronological structure will be adopted to show the trend the disease for a period of years to the recent time. Various causative agents like lifestyle and preventive methods including physical exercise will also be examined in details.

Methodology

Explanatory research design will be used for the study. The population of the study will consist of a group of patients with obesity. Both primary and secondary data will be used for the study. Structured questionnaires will be used to collect primary data while secondary data will be collected using hospital reports. The Questionnaires will be sorted to check for consistency, followed by coding and later data entry will be undertaken using computer software known as statistical Package for Social Sciences (SPSS).Ethical considerations protect the rights of participants by ensuring confidentiality.

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THE MANIFESTATIONS OF OBESITY IN AMERICAN SOCIETY

Background
Obesity is a serious problem facing most modern societies. According to Ogden et. al. (2014), over 17% of youth and 39% of adults in US are obese. It is therefore imperative that effective interventions are developed to address this issue facing American society.

Aims
The aim of the research is to understand the main causes of obesity within the US. Through understanding causalities of obesity, the research will then focus on effective mitigations and solutions for this problem within the context of the American society.

Method
The research will involve literature review on causes of obesity and its potential solutions. Academic journals such as Finkelstein et. al. (2012); Ogden et. al. (2014); William & Ludwig (2013); Sahoo et al. (2015); Felitti et. al. (2010) and the article by the Centers for Disease Control and Prevention (2015), will be used for research. The themes that emerge from these literatures will inform research findings on causes and solutions for the obesity problem in US.

Results
The expected results are that obesity is caused by factors such as lack of exercise, eating high calories diets, underlying medical conditions, lack of information on dangers of obesity and poor dietary habits among children potential solutions for obesity include educational awareness, exercise, clinical interventions, and lifestyle changes.

Conclusions
In conclusion, obesity is a serious problem that threatens the health and wellness of the current population. Its causes include poor lifestyle choices, poor diet and lack of awareness on dangers of obesity. Potential solutions may be changes in lifestyle, educational awareness and clinical interventions. Implementing these solutions will improve the health of current and future generations.

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